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THE JOURNAL
OF THE
OKLAHOMA STATE MEDICAL ASSOCIATION

VOLUME XXIV MUSKOGEE, OKLAHOMA, JANUARY, 1931 NUMBER 1

TRAUMATIC AND INFLAMMATORY BRAINS—WITH PNEUMOGRAPHIC DEMONSTRATION OF SOME AFTER-RESULTS*.

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Brain tumor, brain abscess, the traumatic brain without fractured skull as well as with fracture, neurosyphilis, and other lesions of the brain, apparently are making the "organic brain conditions" more frequently encountered. The fact that they are frequently encountered permits the underlying pathology of each type of condition to be better understood. By means of the roentgenray and the injection of air, or other foreign material, into the cerebro-spinal fluid spaces, they may be more accurately diagnosed, and hence, better opportunities of instituting the proper treatment.

There are now some forty to fifty principal types of nervous and mental diseases, and most of these types have various subdivisions. Of this immense number there exists only four, which, up until the present, have been considered as "functional" diseases. As in diseases of the other systems, there is a tendency to feel that back of each of these four there may be some general psysico-chemical or organic disturbance. The four are epilepsy, psychoneurosis, manic depressive, and dementia praecox. The present day conception of epilepsy is rapidly changing and proof is fairly conclusive that all convulsions are in reality symptoms, in the same way that headaches and diarrhea are symptoms. Conclusive proof is available that most convulsive and epileptic states are organic in origin, while there are few that are toxic, as, angioneurotic edema, eclampsia, and some of the allergy reactions.

Now obstruction of normal passageways in an organ or system of organs results in pathology, usually of the parenchyma of that organ. This obstruction may be complete, or it may be continued partial. It may be at any point in the passageway. The sole requirement to cause disease is "obstruction." Well does the genito-urinary man know the resulting pathology of any obstruction along the urinary tract. What happens when there is obstruction of the bile ducts, the pancreatic ducts, ducts of the salivary glands, or even obstruction of the intestines? What is the result of the heart, either in aortic stenosis, or in generalized peripheral arteriosclerosis? What is the result from obstruction of the portal circulation? The resulting pathology of each of these is fairly well understood by all. Obstruction, either complete or partial, in the passageways of cerebro-spinal fluid, usually results in a disease process of the principal tissues of the central nervous system, namely, the brain tissues. Should the obstruction be at the point of exit of the fluid, a generalized atrophy, due to back pressure of the parenchyma, will result. Should the obstruction occur within the cerebrum, a localized strophy might result.

Cerebro-spinal fluid liberated into the ventricles escapes through the foramen of Magendie and the two foramina of Luschka into the cisterna magna, thence to the other cisternae at the base of the brain, and then passes up over the cortices to the pacchionian bodies. From the foramina as listed above, it may pass into the subarachnoid spaces surrounding the spinal cord. The point of exit of the fluid takes place principally through the pacchionian bodies into the superior sagittal sinus, to the lesser extent through the arachnoid villi around the exit of the various peripheral nerves from the subarachnoid system, and to the least extent through the walls of the adjacent perineural spaces. Disease processes involving the arachnoid villi and pacchionian bodies might prevent exit of the cerebro-spinal fluid, and we would have resulting sequelae in the

*Read before Grady County Medical Association April 4, 1930, in meeting at Chickasha, Oklahoma.

central nervous system corresponding to sequelae resulting in obstruction in other systems. One of the most common causes of diseased villi and the pacchionian system has been demonstrated to be red blood cells and their pigment. Thus trauma of the central nervous system resulting at birth, or blows on the head, or from trauma of any origin, even from the spinal puncture, should be treated with caution. During these days of car accidents, etc., considerable thought should be given to this type of injury. Now senility, and arterioclerosis, as well as meningitis, alcohol, lead poisoning or any toxic condition, might cause disease of these tissues which normally permit exit of the fluid.

Thinking some of the difficulties encountered in diagnosing these brain conditions, that some of the diagnostic procedures used, and some of the prominent symptoms of such conditions might be of general interest, there is here very briefly given a few reports with comments made on respective cases. Service which the X-ray can give in pneumography is demonstrated.

It is well to emphasize that in working with neurological patients in State hospital, problems are present which the physician doing private practice is not forced to deal. In other words, should a patient with brain tumor call upon a physician in private practice, the examiner is assured of some co-operation, and he also has present relatives of the patient who can give some information. On the other hand, in our State hospital, the patient with the brain tumor enters the hospital with either strictly mental symptoms, or if some other symptoms are present, the mentality of the patient is so that he cannot give correlated information as to his subjective symptoms, no history is he able to give, and sometimes he enters in a comatose state. Again, the relatives seldom accompany the patient, and here the other valuable source of important history is not accessible.

Diagramatic representation of the normal passageways of the cerebro-spinal fluid as drawn by Temple Fay, professor of neurosurgery, Temple University, Philadelphia. (Fig. A), shows the ventricular and cisternal systems, the arrows pointing the course of the fluid, as the greatest quantity from these systems passes up over the cerebral cortex to the principal outlets, the pacchionian bodies. Possibili-

FIG. A.

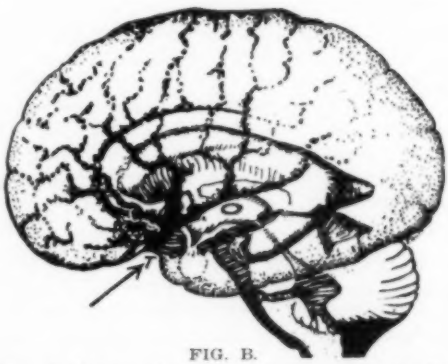

FIG. B.

ties of obstruction at various points in the pathways and resulting pathology may be easily demonstrated in Fig. A. For example—obstruction at the pacchionian bodies would result in an accumulation of fluid adjacent to them causing pressure atrophy of the cortex with an external hydrocephalus (Figs. 6 and 7) while obstruction of the foramina of the fourth ventricle, i. e., Magendie and Luschka, would result in an internal hydrocephalus and pressure atrophy of all brain structures due to pressure from within outward.

Fig. B shows the relationships of various passageways of the fluid to each other, as well as to the brain structures. At "T" adhesions, arachnoiditis, etc., could cause sufficient obstruction of the fluid, which should pass over the cortex and to the principal outlets, that there would result accumulation of the fluid within the ven-

tricles, cisterna and spinal subarachnoid regions giving a communicating hydrocephalus (see Fig. 8).

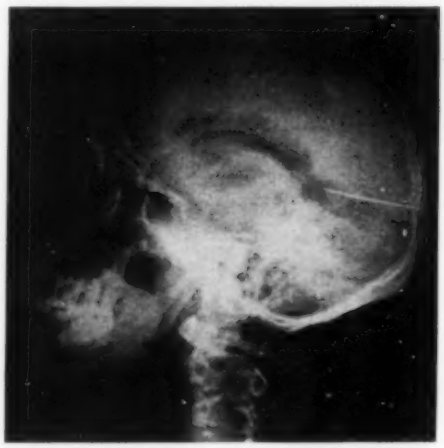

FIG. 1.
NORMAL VENTRICLES (Lateral View)

Ventriculography (Direct displacement of ventricular fluid by air injection.)

In this position, the two lateral ventricles with respective posterior and anterior horns are well shown. The intraventricular foramina, third ventricle, cerebral aqueduct and upper portion of the fourth ventricle may be seen.

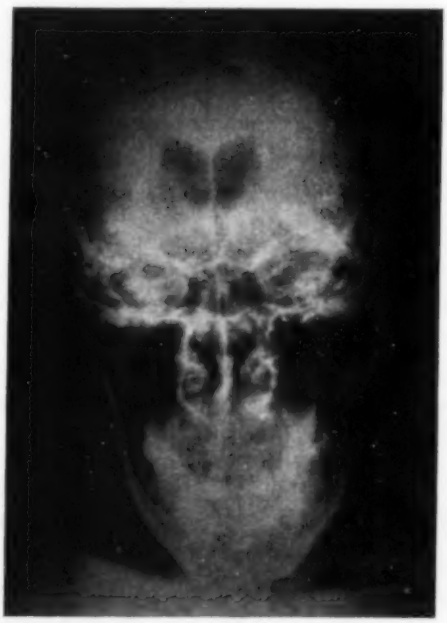

FIG. 2.
NORMAL VENTRICLES-(Anterior-Posterior View).

Ventriculography—The "Butterfly" effect of two normal lateral ventricles is demonstrated. The proximity of the two ventricles to each other anteriorly, with septum pellucidum between, may be noted. The divergence of the ventricles posteriorly is dimly seen.

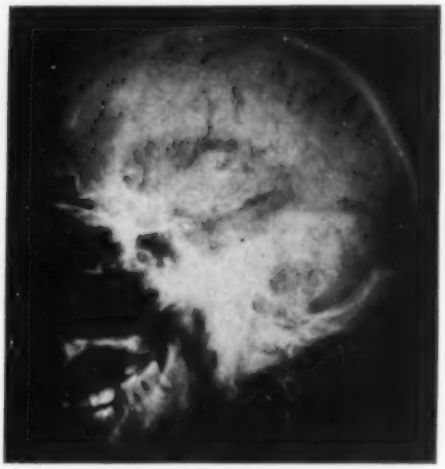

FIG. 3.
NORMAL FLUID SPACES

Encephalography (Injection of air into lumbar or cisterna magna subarachnoid spaces, permitting it to pass up over the cerebral cortices as well as to pass into the ventricular system through the foramina of Magendie and Luschka.) This represents almost normal appearance. All markings over the cortex show slight enlargement. Those in the occipito-parietal region are somewhat increased as compared to the normal. There is questionable slight bulging or hydrocephalic effect of the anterior horns.

EPIDEMIC ENCEPHALITIS-PSYCHIC SYNDROME

In Fig. 6 note the generalized "shrinkage" of the cortex, the increased number and size of fluid passageways over the frontal lobes and the increased number of passageways over the occipital lobes. The small round areas of air can be explained only by the enlargement of the perivascular spaces due to "atrophy" of the adjacent cerebral tissues.

FIG. 6.
ENCEPHALOGRAPHY
(Lateral View)

FIG. 7.
ENCEPHALOGRAPHY
(A.P. View)

In Fig. 7, (A.P. view) the extensiveness of the cortical shrinkage is well shown. In both views outlines of various gyri may be seen. In both it will be noted that the ventricles did not fill with air.

These two figures demonstrate typical "external hydrocephalus"—probably due to obstruction in pacchionian bodies as result of encephalitic inflammatory process.

FIG. 8.
AN ENCEPHALOGRAM—BIRTH PALSY AND EPILEPSY (Age of Patient 35)

No air marking over the cortex can be noticed. There exists no demonstrable space between the brain surface or pia mater and the arachnoid membrane. Evidently the pacchionian bodies have never functioned, and there probably is a compensatory action by the arachnoid villi in the spinal regions.

The enlarged, filled ventricles (the air having been injected from the lumbar region proving the foramina of the fourth ventricle are open) give a nice demonstration of "communicating hydrocephalus."

The larger or left ventricle is farther away from the photographic plate, and hence there is more of an apparent inequality of the ventricles than really exists as the A.P. view (not shown) demonstrates.

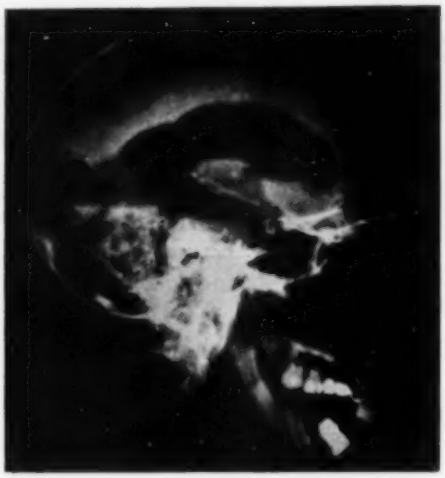

FIG. 9.

ENCEPHALOGRAM—POST-TRAUMATIC DEMENTIA

About 120 cc. is the maximum average quantity of fluid in normal individuals. Removal of fluid in this patient was discontinued after 178 cc. was displaced by air because the patient began to complain, and I was not sure of the existing pathology. In the ventricle nearest the film may be seen some remaining fluid in the posterior horn, however, the end of the horn is well filled with air.

No air markings over the cortex may be seen and this with the communicating hydrocephalus (air having passed through the foramina into the ventricular system) is diagnostic of obstruction of fluid pathways at the base of the brain. (See Fig. B with notes.)

The patient, a successful business man, had onset of neurological and mental conditions since sustaining a fractured skull June, 1928. One is justified in diagnosing the obstruction as traumatic inflammatory adhesions between the pia and arachnoid.

This individual could probably be kept from rapid deterioration by frequent withdrawal of cerebral-spinal fluid from cisterna magna.

FIG. 10.
ENCEPHALOGRAMS
(A.P. View)

FIG. 11.
ENCEPHALOGRAMS
(P.A. View)
POST-TRAUMATIC DEMENTIA

In Fig. 10 the assymmetrical but enlarged and hydrocephalic ventricles are

well shown, the ventricle on the right showing the fluid which was not removed, is a good demonstration of what may happen with improper technic. In both Fig. 10 and Fig. 11 it is interesting to compare the space occupied by the ventricles to that occupied by brain tissue. In Fig. 11 it is noticed that the ventricle on the right side comes out to the surface of the brain.

To realize from these two pictures the amount of hydrocephalus with resulting brain destruction which can take place in about two years time as a probable result from bleeding into subarachnoid spaces should make one think of directing treatment, immediately after an injury, toward keeping blood out of these spaces.

FIG. 12
ENCEPHALOGRAM—POST-TRAUMATIC AMENTIA

Not a good X-ray exposure. Two encephalographies were done on this patient within a period of two weeks. At the first one only about 70 cc of fluid could be displaced and the X-ray failed to reveal any air within the ventricles. It was decided that some error in the technic had occurred and hence a second attempt ten days later. At the second encephalography, again approximately only 70 cc of fluid could be displaced. Again the X-ray failed to reveal any air within the ventricles, and the picture as given was identical with the first. Normal air markings are noticed except over the extreme frontal pole. Here localized atrophy with outline of three gyri may be distinctly seen, and this eight months after injury. Because of the failure to obtain more than 70 cc of fluid, and failure of air to enter the ventricles, after two attempts, the possibility of obstruction of the foramina of Magendie and Luschka with a resulting internal hydrocephalus was considered. Puncture of ventricles and ventriculography was decided upon with result as shown in Fig. 13 and Fig. 14.

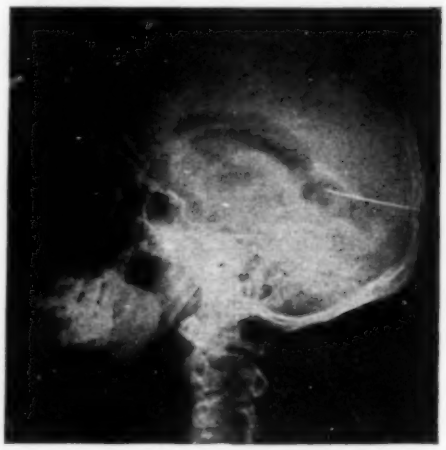

FIG. 13.
VENTRICULOGRAMS—POST-TRAUMATIC AMENTIA

FIG. 14.
VENTRICULOGRAMS—POST-TRAUMATIC AMENTIA

Ventriculograms of same patient as in Fig. 12. The possibility of internal hydrocephalus was disproven, both lateral and A.P. views showing normal size and outlines of the lateral ventricles. Evidently the contour of this individual's skull and its relationship to the within brain structures was such that air not only failed to pass through the foramina into the fourth ventricle, but fluid did not pass out of the ventricular system while doing two different encephalographies. The possibility of just improper manipulation to suit this individual case yet remains, but Dandy states that failure of air to enter the ventricles, normally occurs.

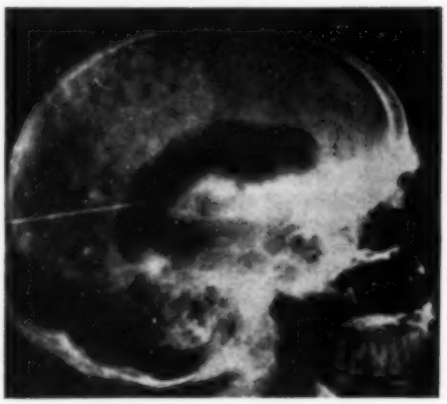

FIG. 15. (Lateral)
VENTRICULOGRAMS-NEUROSYPHILIS WITH APHASIA

FIG. 16. (A.P. View)
VENTRICULOGRAMS-NEUROSYPHILIS WITH APHASIA

The posterior horn did not fill, probably, because of improper technic.

Note the generalized "moth-eaten" appearance of the entire cranium.

In the lateral view (Fig. 15) the contrast in size of the lateral ventricles is not so clear as in the A.P. view (Fig.16).

In the A.P. view, due to the atrophic condition of the left hemisphere, one sees an attempt to compensate for the shrinkage, with a resulting unilateral hydrocephalus and a slight displacement of both ventricles toward the atrophic (left) side. The symmetrical butterfly appearance of the ventricles is disturbed with the normal angulations in contour of the left ventricle gone.

IMPORTANT POINTS IN DOING PNEUMOGRAPHY OF THE CEREBRO-SPINAL FLUID SPACES

1. Study your patient sufficiently to be sure that pneumography is indicated and know when to use ventriculography and when to use encephalography. These two procedures are complementary and each has its own indications and contraindications.

2. Ventriculography should be used as a last resort to make a diagnosis and only after all symptoms and all other diagnostic procedures have failed to localize the lesion. The percentage of fatalities reported in present literature from this one procedure averages from eight to ten percent. This procedure should be attempted only by the brain surgeon, and because of the possibility of an emergency arising, he should be prepared for surgery before starting the procedure.

3. Encephalography should be done with caution in any organic condition suggesting tumor or marked intracranial pressure. It should not be done when the fluid pressure is over 20 mm. of mercury (patient in prone position) nor when symptoms indicate that a lesion, more especially a tumor, exists within the posterior part of the third ventricle, the aqueduct of Sylvius, the fourth ventricle: or within the cerebellum, the medulla, the peduncles, or the pons. This precedure is indicated principally in diagnosing supratentorial lesions, and lesions of the cerebral cortex, as in post traumatic conditions. The mortality from this procedure in 1529 individuals as reported in literature, has been 1.2% and most of the fa-

talities have been when tumors were present.

4. In doing encephalography, a constant pressure of the cerebro-spinal fluid should be maintained, and, at the close of air injection, the spinal manometer should record the same or slightly lower than it did at the beginning of the procedure.

5. Know the normal contour of the cerebro-spinal fluid spaces and the relationships of the various pathways of the fluid. This is essential before one can know how to manipulate or place the patient to insure complete filling of the spaces with air. It is also necessary before one can properly interpret the roentgenray picture.

6. Be sure the entire fluid system has the fluid well displaced by air.

7. Exact alignment and proper placing of the patient is essential to taking a picture which may be accurately interpreted.

SUMMARY AND CONCLUSIONS

1. After results of a few acute and chronic inflammatory, as well as traumatic brain conditions, as demonstrated by pneumography, have been given.

2. Trauma and infections may affect the brain tissues and cause sequelae, but individuals may recover from the acute conditions and later, due to involvement of the passageways or outlets of the cerebro-spinal fluid, develop various types of "water brain" with their respective symptomatology.

3. It is probable that alcohol, drugs and various toxins, as well as red blood cells originating from trauma, and exudates from any type of inflammatory process of the nervous system, may so affect the outlets of the cerebro-spinal fluid that convulsions or brain degeneration may ensue.

4. All head injuries should be considered as dangerous and in this day of so many traumatic brains, treatment should be instituted by the attending physician with the idea in mind to prevent future symptoms developing in his patient. In the light of recent experiments and investigations of Weed, Bagley, Sharpe and histo-pathological examinations of the pacchionian system by Winkleman and Fay, procedures which should be instituted to combat bleeding into the subarachnoid spaces are here outlined briefly.

(a) Disturb the patient as little as possible.

(b) Be in no hurry about an X-ray picture. When the patient becomes quiet, for records and for added information, an X-ray picture may be done.

(c) Elevate the head of the bed.

(d) Place ice caps to the head.

(e) Altho as yet a debatable question, spinal drainage every six hours, or as often as bloody fluid is evident, should be of benefit in prevention of sequelae.

(f) For several days, to reduce intra-arterial pressure and cerebral edema, limitation of fluid intake, and saturated magnesium sulphate by mouth or rectum may be given.

(g) Glucose, (50 per cent to a saturated solution) in quantities of 50 to 150 cc intravenously, is the best preparation to reduce intra-cranial pressure, but it, as well as intravenous hypertonic salt solutions, yet remains to be proven proper therapy. One can see that by temporarily increasing intra-arterial pressure that there might result more bleeding into the subarachnoid spaces when administering the intravenous solutions immediately after the trauma.

LOCALIZATION OF SPINAL CORD TUMORS*

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TULSA

I propose to discuss some of the important essentials in the localization of tumors of the spinal cord. I will use three cases to give point to my notion that careful localization by such means as may be required in any given case is an absolute prerequisite to surgical intervention. All data in these cases not bearing on the matter of localization is purposely omitted.

Case 1. T.M., male, age 39, single, by occupation an editorial writer. He complained of paraesthesia in the right leg; awk-

*Read before the Section on General Surgery, Gynecology, Obstetrics and Urology, Annual Meeting Oklahoma State Medical Association, Shawnee, May 28, 1930.

wardness in use of right foot and outer two fingers of the left hand and a sharp pain at times in the supra-spinous area of the left scapula. The first symptoms had been noted two years previously and they were vague pains and paraesthesia in the right lower extremity. He soon had difficulty in using the small finger of the left hand at the typewriter. Within the past year he had noticed a decrease in pressure and pain sensitivity in the right lower extremity and that when he leaned against the lavatory with the anterior aspect of the thighs that the contact did not provoke a sensation of coolness in the right thigh. The sharp intermittent pain in the upper left scapular area had been present for only a month, but was rapidly becoming more severe.

The neurological examination showed increased reflexes in the right leg and left arm with right Babinski. All forms of sensation were lost on the right side except deep pressure to the nipple line. There was decreased sensitivity to pinpoint and motor weakness in the left ulnar area. The examination would indicate that the tumor was in the lower cervical cord. The pain in the left supra-scapular area pointed to the third cervical segment as the location of the tumor. The patient was observed for one week with a persistence of the pain and no change in objective examination findings. He was then sent to a surgeon who removed a tumor which was lying anterior to the third cervical segment. Recovery was uneventful and after one year nearly complete return of function had taken place. This case is presented because it involved nothing more than history and clinical examination. The localization was made on the subjective location of a root pain. Therefore, the first essential in the localization of spinal cord tumors is a careful history; a history that goes back to the earliest symptoms and covers the course of events in a minute, searching manner. Such an inquiry may disclose information that will definitely localize the tumor as in the case cited.

Case 2. Mrs. G., age 46, a saleslady by occupation. She complained of a paralysis, numbness, and stiffness in the lower extremities, The first symptoms had appeared 12 years previously and had been a feeling of heaviness and dullness in the right foot that required four years to reach the groin. In the meantime the left leg had been similarly but less severely involved. The spastic paralysis of the lower extremities had started eight years ago, or four years after the earliest symptoms and had slowly progressed to paraplegia but one month earlier. The examination may be summarized by stating that it indicated a nearly complete transverse myelitis at the somatic level of the umbilicus anteriorly. This corresponds to the ninth dorsal cord segment, which would be opposite the sixth dorsal vertebra. Then allowance would have to be made for the spino-thalamic fibers for pain and temperature which travel from one to three cord segments before decussation. The highest level indicated would therefore have been at the second or third dorsal vertebra. This patient had no pain at any time. The findings pointed to an intramedullary lesion and were recognized as capable of leading to gross error in localization. An X-ray examination of the entire spine added nothing positive to the data. However, it is well to establish the status of the spinal column by X-ray plates so that in the procedures presently to be described one has ruled out any possible sources of error of interpretation. The patient was subjected to combined puncture of the cisterna magna and lumbar spine. The latter was done first and a yellowish fluid with increased globulin was obtained. Before withdrawing the fluid the pressure was taken with the Queckenstedt apparatus. This measures the pressure directly in centimeters and allows direct observation for respiratory oscillations and changes in pressure by jugular compression. The normal pressure of the cerebrospinal fluid on the Queckenstedt apparatus is ten to twelve centimeters and upon jugular compression it will promptly rise to about double the normal reading and then slowly subside. The primary pressure in the patient under discussion was four centimeters and the respiratory fluctuation was barely discernible. Jugular compression caused the pressure slowly to rise to six centimeters. The return to the original pressure was very slow. Thus evidence of a rather high grade subarachnoid obstruction or block of the flow of the cerebro-spinal fluid was obtained. Fluid was withdrawn for laboratory examination and one cubic centimeter of ascending lipoidol was injected into the subarachnoid space. The puncture of the cisterna magna was then done according to Ayer's technic and one cubic centimeter of descending lipoidol was injected. The patient was then placed in a semi-erect po-

sition and X-ray plates of the spine were taken at once. The descending lipoidol was arrested in caplike fashion opposite the body of the sixth cervical vertebra; another plate taken twenty-four hours later showed it remaining in the same position. Because the ascending lipoidol had been wrongly labelled it in fact was descending and was found in the lower end of the dural sac. Laminectomy of the sixth and seventh cervical vertebrae was done and an inoperable intra-medullary tumor was uncovered.

This case demonstrates the usefulness of spinal puncture. The presence of block was clearly evident by the Queckenstedt test. The xanthochoromatic fluid with increased globulin is also pathognomonic of a block and would in this or in any similar situation warrant one to proceed with the injection of lipoidol in the expectation that the X-ray plates would show it held up by the tumor. I am aware that some men have opposed both spinal puncture and the use of lipoidol for localization. In my opinion the use of these aids to localization in properly selected cases is entirely justified.

Case 3. B.N. The last case to which I will call your attention is that of a single girl age twenty who had been paraplegic for one month. Her trouble had begun one year earlier with numbness in the left foot, which had progressed to the lower abdomen and was still slowly ascending. The gait had been involved shortly after the first sympton of numbness appeared; she had required aid in walking five months after onset and had been bedfast for one month. Two weeks before my examination she had noticed some numbness in the left hand and awkwardness in reaching for objects. There had been occasional aching in the thigh muscles, but no history of true root pains could be obtained. The neurological examination showed strong evidence of an incomplete transverse myelitis, certainly not lower than the upper dorsal region. The symptoms in the left hand strongly suggested a cervical lesion and I advised observation and repeated examinations. The spinal fluid had been taken before I saw her and was entirely negative by laboratory examinations. I was informed it flowed normally so there was strong presumptive evidence against block.

My advice to make haste slowly was apparently not acceptable, so a surgical consultant repeated the spinal puncture, but made no tests for evidence of partial or complete block. He injected lipoidol and obtained by X-ray an oblong faint shadow opposite the twelfth dorsal vertebra. He interpreted this as evidence for the location of the tumor and did laminectomy on the twelfth, eleventh, and tenth dorsal vertebrae and found a normal spinal cord.

There was no indication for the use of lipoidol in this case. After all it is only an aid in localization in such cases as present indications for its use; the principal one of which is some evidence of block. The shadow obtained was too faint to arouse more than a weak suspicion that it was lipoidol, also its shape was quite atypical. The clinical examination of the patient showed beyond any doubt that the tumor must be at least seven to nine vertebrae higher than the location of the shadow, and as in the first case there was subjective symptomatology indicative of a still higher level. Therefore, it was gross error to expect to find a tumor in the lower dorsal vertebra unless the patient had multiple tumors. The same rule holds here as in all other diagnostic procedures; the laboratory help must fit the clinical findings or be rejected.

The lesson of this last case is obvious; it represents misplaced confidence in a localization procedure that should not have been attempted for the sufficient reason that there was not present the conditions that would give one any hope of worthwhile results.

In summary then the localization of tumors of the spinal cord is done by the aid of a good history and careful *repeated* neurological examinations. The data obtained must be carefully interpreted in terms of the anatomy and physiology of the spinal cord. Many cases will require X-ray examinations, spinal puncture with careful study of the pressure of the cerebro-spinal fluid and lipoidol injections if conditions are established that give a proper basis for its use.

Seldom does the course of events lead so directly and positively to the localization as in the first case. More often one is required to study the patient carefully by all means at our command. That errors will occur occasionally is inevitable; we should maintain a sufficiently critical and informed state of mind so that mistakes like that of the last case can not recur.

COMPRESSION FRACTURES OF THE SPINE*

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A compression fracture of the spine may be defined as a fracture affecting the weight-bearing portion of the spine, and is a crushing of the spongy bone tissue from above downward, or below upward, with consequent loss of the normal size, outline and position of the body or bodies of the injured vertebrae.

Injuries of the back have long been such a fertile resource to those claiming damages as a result of an accident, that the surgeon looks askance, and rightly so, at any claimant who complains of pain, tenderness, limitation or motion, etc., in the back. However, the honest patient should not be so regarded even when his symptoms appear to be out of all proportion to the severity of his injury. Therefore, every individual who has been subjected to an injury to his spine, should be carefully X-rayed. The spine should be X-rayed laterally, or at least diagonally, to get any reduction in height of the bodies of the vertebrae anteriorly. Rotations, as well as lateral displacements, are best shown in the anterior-posterior view.

In certain coal mining sections of Oklahoma, compression fractures of the spine almost invariably occur in the following manner; the laborer at his work is in a stooping position and the force is applied from above downward, which force is usually the falling of rock, varying in amounts from a few pounds to several tons. The shoulders are driven toward the knees. The pelvis being fixed, and the ribs fixing the dorsal spine, a lever is formed above and below, and the body of the vertebrae is crushed between these opposing forces.

There are three locations in the spine where a compression fracture is prone to occur; first, the upper cervical region; second, the upper dorsal region, and third, the dorso-lumbar region. The higher fractures in the spine are usually fatal and for all clinical purposes may be disregarded. The fractures occurring in the lower part of the spine are not so serious. About two-thirds of all the compression fractures occur in the lower spine.

The recognition of a compression fracture may be very difficult, unless an X-ray is available, or the compression fracture is extreme, since it frequently happens that these fractures are not complicated by any loss of cord function. This is due to two factors; first, the effect on the spinal canal is merely to reduce its length without a break in the continuity, or any lessening of its caliber; second, because compression fractures so often occur below the level of the lumbar enlargement of the cord.

DIAGNOSIS

The symptoms of a compression fracture of the spine vary from no external evidence whatever, to total flaccid motor and sensory paralysis, together with visceral paralysis and loss of reflexes. A certain opinion cannot be expressed within the first four days as during that period the symptoms are apt to increase or decrease. A better prognostication can be made after the lapse of a month. There is only one certain method of determining the exact condition, and that is by laminectomy and laminectomy is not often called for in compression fractures.

The most frequent symptoms are; pain, increased on motion and irregularity of the line of the spinous processes, the usual deformity being kyphosis. One symptom being common to all vertebrae fractures is shock, manifested at the seat of the body lesion.

The chief symptoms depend upon the amount of injury done to the spinal cord. If the cord has been damaged, motor and sensory paralysis, either partial or complete will be found up to the level of the lesion. The anesthesia corresponds usually to the motor loss, with an area of hyperesthesia just above the level of the lesion; this hyperesthetic zone is the best single index of the height of the damage in any case. Trophic signs are generally present.

In a complete transverse lesion, the history of the onset of symptoms is sudden. The symptoms appear immediately following the injury, whereas if a partial injury is present, an interval may have elapsed before the symptoms develop. The appearance of the symptoms is gradual rather than sudden. In a complete transverse lesion, the motor paralysis is found to be complete and the paralyzed muscles are

*Read before the Section on General Surgery, Gynecology, Obstetrics and Urology, Annual Meeting Oklahoma State Medical Association, Shawnee, May 28, 1930.

flacid; whereas, if the lesion is a partial one, the motor paralysis is limited. Some muscles of the limbs are paralyzed, others are not, and there is often noticed muscular spasm in the affected limbs. In a complete transverse lesion, sensation is entirely gone; in a partial lesion some sensation is felt. The knee jerks are usually absent in a complete lesion; in the partial lesion they are usually present. In the transverse lesion, visceral paralysis is complete; in the partial lesion, visceral paralysis is not always present. Priapism, sweating and involuntary muscular twitching are seen more commonly in the complete lesions.

TREATMENT

The treatment of compression fractures of the spine is largely the treatment of fractures elsewhere in the body. Splinting the fracture early (splint them where they lie) is very apropos.

In fractures associated with cord injury, the second most important element in the treatment is the aseptic control of the bladder, together with the prevention of bedsores. In the first week, fatality is generally due to the trauma itself, but thereafter it is due to complications of which sepsis is the chief. Therefore, the prevention of sepsis must be one of the primary objects in the treatment.

The next object in the treatment is to relieve the cord from pressure and to replace the fragments and to immobilize the fracture. The cord will be uninjured, slightly injured or seriously injured. If the cord is uninjured, the bony parts may be left untouched or they may be replaced by manipulation. If the cord is injured, the advisability of operative interference will depend upon whether the lesion of the cord is transverse and complete, or whether it is partial. If there are evidences of a transverse lesion, operation is unavailing and obviously illogical, for the cord cannot be repaired. It is therefore necessary to distinguish between the signs of a transverse lesion and those of a partial lesion.

Most cases of bony pressure are due to dislocation of the vertebrae which are remediable by external means, either by backward flexion, suspension by pulley fastened to the chin, or by traction on the head and feet, with the patient in prone position. If the bodies of the vertebrae are badly crushed, little or no impression will be made upon the deformity by external force.

In severe compression fractures—severe enough to do damage to the cord—usually irreparable damage or injury has been done by either a distinct crush of the cord or hemorrhage into the cord. The hemorrhage takes place often at some distance from the seat of the chief lesion, so that even if the seat of the crush of the cord were repaired by operation, damaging lesions would still remain unrevealed. It is also the result of experience that removal by operation of the laminae and spines of the vertebrae in the suspected region of fracture, almost never reveals any remediable condition or affords any evidence of the exact seat of the lesions or their extent. The reason is that the dura at the seat of a crush of the cord, whether partial or complete, remains intact and untorn and that extradural hemorrhage is unusual. After the removal of the laminae, the surgeon is as much in doubt as he was before.

With present knowledge of the pathology of this fracture, and excepting cases of fracture with pressure upon the cauda-equina and pressure where there is a partial lesion of the cord, there can be no doubt that the best treatment for compression fractures of the vertebrae is by the expectant method; immobilization of the part by a plaster-of-paris jacket applied to the trunk, if there is no deformity. If there is deformity, correction of it and immobilization of the spine in the corrected position. The correction of the deformity should be immediate to avoid irremediable softening of the cord from pressure which may occur even within forty-eight hours.

In commenting upon compression fractures, Dr. John B. Murphy once said: "If the injury occurred above the cauda-equina and instantly produced complete annular paralysis of both motion and sensation, it would mean that the cord was completely severed and since the true cord has no power of regeneration there would be no improvement with operation, nor would there be any without operation. Therefore, better not operate."

If, on the other hand, the true cord is not cut, but merely compressed, early operation is much more urgently indicated than when the cauda-equina is compressed, because the cauda is more like peripheral nerves in that it has some regenerative power and early operation is not necessary.

Massage, electricity and other gymnas-

tic methods are all valuable adjuncts in the treatment of the paralyzed muscle and they may be made use of rather early, also splints to avoid foot drop.

CONCLUSIONS

1. Early splinting of injuries to the spine is highly important.

2. Many complications such as Kummell's disease and hematomyelia, which may occur in compression fractures of the spine, may be avoided or at least minimized by the proper handling of such injuries.

3. All severe back injuries should be carefully X-rayed both anterior-posteriorly and laterally.

4. Compression fractures in the upper part of the spine are usually fatal, irrespective of treatment.

5. Compression fractures as a rule are best treated by the expectant method.

OSTEO CHONDRITIS DEFORMANS JUVENALIS

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Why should a rare condition such as osteo chondritis deformans juvenalis be considered before a group of general surgeons? In the first place, we know now that it is not such a rare condition as we once believed it to be. With the advantages afforded by the examination of great numbers of cases of crippled children, and the improved and more general use of the X-ray, we are diagnosing more accurately the obscure cases, and Perthes disease falls into this group.

We are therefore, presenting this paper because we feel that we have been able to study several cases which have a very definite bearing on a most recently mentioned etiological factor—disorder of the glands of internal secretion.

Perthes disease is a bony affection of the head of the femur, with insidious onset and rather mild symptoms, which leads to a lameness and to a very definite deformity of the head of the femur and usually with concomitant changes in the acetabulum. It occurs in males more often than in females, and usually between the ages of five and twelve. It is generally unilateral, but may be bilateral.

Etiology: Many etiological factors have been suggested, but no single factor seems to entirely explain the condition which actually exists. The theory of trauma has found many staunch supporters. In a young child the epiphysis of the upper end of the femur is dependent for its blood supply on the small vessels entering its circumference where the head and neck join. Trauma may obliterate these vessels and as a result we get a necrosis of the epiphysis. In supporting this theory we have only to mention the reduction of a congenital dislocated hip where sometimes follows a necrosis of the head of the femur. These changes do not closely assimilate Perthes disease.

Second, we must consider some congenital abnormalities of the hip. It is easy to visualize a deformed acetabulum which is too shallow or too wide, into which the head of the femur improperly fits and a resulting deformity occurs and then with this flattening of the head we get certain nutritional disturbances which result in necrosis.

Third, many writers have laid particular stress upon infections. They believe that it is essentially a disintegrating process which is due to some low grade infection. It has been confirmed by two or three surgeons who have opened the hip joint, but most workers along this line believe that these findings were erroneous and that the cultures of staphylococcus found were due to contamination. I personally do not believe the infection has any part to play in the etiology, except as a possible secondary invader. I am glad to say I have never opened one of these hips either as a diagnostic or curative procedure.

Fourth. Glands of internal secretion. This theory has been mentioned but has not been strongly advocated, not because it was illogical, but because so little research has been carried out. In my opinion we can look forward to great accomplishments in the etiology in this field of work. To some extent we have found out the effect of the thyroid and pituitary on bony growth and development and very recently we have learned the effects of the parathyroid gland.

In support of this theory we have studied a great many consecutive cases of osteo chondritis deformans juvenalis which were typical of disorders of the glands of

internal secretion. These cases were hypothyroid, hypopituitary or hypogonad, or a combination of one or two types. We have now under observation six cases of this type. All of these children are in good general health, but range from forty to sixty pounds overweight, and present rather typical hip changes.

Symptoms: The onset of this disease is usually insidious. The most frequent symptom noted is a limp, the foot on the affected side is dragged and is usually held in an everted position. There may or may not be pain, but there is usually some discomfort especially after they have been on their feet for a period of time. There is always some muscle spasm about the hip. There is a certain amount of limitation of motion of the hip, especially in abduction and internal rotation. These symptoms last for a variable length of time, and may be intermittent. The symptoms vary according to the amount of primary necrosis and the character of the regenerative process.

X-ray findings may be divided into four definite stages:

1. Stage of flattening. Increased in the density and a diminution in the size of the bony nucleus, making the head of the bone appear flattened.
2. Stage of fragmentation. The bony nuceleus beings to show irregular calcification, the bony nucleus appears to be broken up, then the cartilage surrounding the bony nucleus gives way and spreads laterally.
3. Stage of repair. The fragments coalesce and become uniform and increase in size.
4. Stage of moulding. Moulding of the reformed femoral head continues until adult life, either a cap or a mushroom deformity persists. The neck of the femur becomes broader and later a shortening of the neck occurs.

The differential diagnosis should be made without great difficulty. There are two conditions which must be eliminated; namely, tuberculosis of the hip and coxavara.

We consider first tuberculosis of the hip. In Perthes disease there is almost free flexion of the leg which is in contra distinction to tuberculosis. In Perthes, in the act of walking the patient puts down his entire sole of his foot, while in tuberculosis they often walk on the toes to spare the leg. Of course, in tuberculosis we find it occurring in undernourished children. The symptoms are characterized by pain, night cries, sepsis, abscess formations, etc. The X-ray findings in Perthes disease are distinctive. In tuberculosis the characteristic signs of the X-ray are (1) lack of calcium, (2) indistinct outline of the joints, (3) changes of the acetabulum. The X-ray findings are diagnostic and will make the differential diagnosis without further aid.

Coxavara is a depression of the neck of the femur, as a result of this depression the trochanters are high and the child walks with a hollow back and a waddling gait. These signs are distinctive.

The prognosis in Perthes disease is fairly good. It depends naturally upon the amount of bony destruction and whether or not there is a secondary arthritis.

Treatment: There is a tendency toward spontaneous recovery in this condition. In our opinion if treatment is begun before the cartilaginous envelope of the epiphysis has been deformed, the subsequent malformation will be much less marked.

The treatment should consist of fixation in an abducted position and such other measures as to prevent the weight of the body being borne by the diseased limb. Usually we place the patient in bed with his leg in extension and abduction. After the muscle spasm has been relieved, we place the extremity in a hip spica-Whitman position—and keep the leg fixed until the X-ray shows a definite improvement. This will vary from four to fourteen months, or even longer. Definite improvement will always prevail and I think always leaves some defect of varying degree, but not necessarily any crippling or disabling symptoms.

Let me also add as a suggestion in the treatment that the definite glandular types of obesity be closely observed and should any symptoms referable to hip disease be manifest, let him be X-rayed and I think that some of the cases will be diagnosed early enough to prevent deformity.

These fat children should be reduced by proper treatment as prophylactic and curative management.

FRACTURE OF THE NECK OF THE FEMUR IN THE AGED

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Old age is a period of life which should bring happiness and enjoyment of previous labors. The individual who comes to old age and is so unfortunate as to have a hip fractured, faces a reverse of circumstances which brings his gray hairs with pain and suffering to the grave.

RESPECT FOR AGE

Because they are old, their case is often unpromising and their treatment inefficient. In some instances, however, age is not given due consideration and the patient subjected to anesthetics, vigorous manipulations and immobilization in a position of great strain, all of which would tax the constitution of a much younger individual to survive.

Even though the patient may live through the torture of treatment, nonunion frequently occurs, and continuous pain and disability is the result. Union with shortening is severely disabling. Union at the expense of a stiffened and painful knee or spine is also not to be desired. Union with no shortening, but inability to walk because of senile mental changes, or loss of balance in locomotion, also is not to be considered a good result.

RESULT WITH PLASTER METHOD

In reviewing final results in cases past seventy where they were treated by plaster spica method, I was greatly disappointed at the small percentage of satisfactory results, although the morality rate was not high and union was obtained in nearly all cases. I found that a stiff knee was very troublesome in all cases; painful backs due to osteoarthritis of the spine was frequent; insanity developed in several; and a number never walked afterward because of loss of balancing ability.

After considering the severity of the cast method and surprisingly disappointing results in those over seventy years old, I began to search for a more satisfactory method. It is not the immediate effect of the fracture that kills, or sets up complications in these old people, it is the lack of surgical respect for senility.

OVERSLUNG AND TRACTION FRAME

The overslung traction saddle frame is the result of developing the Bradford frame and overhead bed frame into a more practical and effective apparatus for this particular type of case. After numerous changes from practical experience, the frame finally evolved into an apparatus such as I shall show you here today. With it we may secure the classical position of immobilization in abduction, internal rotation and extension. The patient is comfortable and the nursing problem facilitated. Other advantages of this frame are as follows:

1. Does not require anaesthetic.
2. Patient nor his position are disturbed when changing linen or mattress.
3. Patient lies on bed mattress rendering comfort.
4. Sitting position possible.
5. Knee and back unaffected.

REDUCTION WITHOUT ANAESTHETIC

Reduction of the fracture is accomplished by position and traction. After assembling the frame over the patient, who lies undisturbed in bed, moleskin adhesive strips are applied to both legs as for Buck's extension and traction applied. To the uninjured leg, a longitudinal pull only is used, while for the injured leg, traction is applied in the form advised by Dr. Russell of Australia for treatment of fracture of the shaft of the femur. This method places a lifting as well as a longitudinal pull on the leg, just as one would do were he to take the knee in one hand and lift slightly while pulling on the leg with the other hand. An adhesive strip is bound to the knee, so that it will pull upward on the outer side of the knee, and to this the traction rope is attached. The pull on the outer side of the knee accomplishes internal rotation. The rope passes through four pulleys. One directly over the knee, another at the upper end of the foot bar, another on the spreader board and then through one lower down on the foot bar, to the weight below.

MECHANICS OF REDUCTION

Position of the leg at first is 10 degrees abduction with thigh flexion of 35 degrees and about ten pounds weight. The weight is gradually increased to tolerance of patient, so that by the fourth or fifth day the fragments should be well approximated. The vertical pull is then released from the knee and applied longitudinally only. The extended knee is fixed in suspension by a

strip of muslin pinned to the bandage on the outer side of the knee to maintain internal rotation. Abduction and extension of both thighs are gradually increased to the fullest extent.

Reduction by this gradual method is accomplished first by pulling upon the thigh in a position which leaves the abductors and extensors relaxed so that the trochanter and remaining neck can pass downward. This could not be accomplished by immediately placing the leg in abduction and extension as is frequently done. After approximation is satisfactory as proven by the X-ray, abduction, internal rotation and extension lock the fragments in position until union takes place. Usually, the frame can be removed at the end of nine weeks. A walking caliper splint may be used in addition to crutches and weight bearing allowed at the end of fifteen weeks. If the walking caliper is not used, weight bearing should be cautiously applied until about the fifth or sixth month after injury.

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LOW BACK PAIN*

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No one reaches adult life without experiencing three ailments, i.e., headache, bellyache and backache. This only shows how common they are and no condition in orthopedic surgery is more frequently encountered than backache. Low back pain will be discussed designating particularly the lumbar and sacral regions. Although physicians have always known and treated such an ailment, it has been only by recent writers that the subject has been thoroughly investigated. This condition being so common it is well to consider those cases where it plays a small role and is only a small part of the complex: the symptomatic type, and in cases in which it is an essential symptom, affecting a particular area or region: the idiopathic type.

Symptomatic low back pain is very frequently in gastro-intestinal disturbances. Of these might be mentioned appendicitis, diseases of the lower bowel and peritonitis. The genito-urinary system offers another common source of backache, of these might be mentioned: renal disease, tumors, adhesions and conditions affecting the bladder and prostate gland.

Probably the most important cases of symptomatic low back pain are those found in gynecological and obstetrical conditions. Here, we particularly think of those pathological conditions such as uterine displacements, tumors and pelvic inflammatory diseases. Also the common backache observed in the physiological pregnant uterus from pressure on the lower part of the spine. This kind of low back pain could perhaps be called physiological.

In diseases of the nervous system, pain in the back is frequently found. To this group belongs tabes, tumors of the cord, meningitis, neuritis and peripheral nerve disturbances—the most common of the last mentioned being, sciatica. This may also be secondary to the essential type of low back pain.

Affections of the spinal column practically always have back pain. This is especially true in tumors of the spine, chronic osteomyelitis, Pott's spine, typhoid spine and different kinds of arthritis, either acute or chronic. Finally, in general infectious diseases such as typhoid, influenza La Grippe, septicemia and acute articular rheumatism symptomatic low back pain plays an important part.

In considering the idiopathic or essential low back pain, a differentiation should be made between those cases resulting from a fracture of a bone, dislocation or displacement of joints and injuries to adjoining structures, and that large group of cases of injuries to the soft structures in the regions of the lumbosacral joint and sacro-iliac synchondroses—this includes most of the low back pain cases of mechanical origin.

It is estimated by several authors such as Herndon and Key, that about two-thirds of the injuries to the spine occur in these regions. Of these cases, approximately 20 percent affect the muscles of the back and 60 percent result in sprains or injuries to the ligaments. When changes occur in the ligamentous structures, due to physical external forces of enough strength to overcome their resistance, a sprain results. The chief function of the ligaments is prevention of motion of the part or joint between their attachments. The normal range of motion in the articulation determines the point at which a sprain begins. This point is the dividing line between physiologic range of motion and pathologic, or sprain.

*Read before the Section on General Surgery, Gynecology, Obstetrics and Urology, Annual Meeting Oklahoma State Medical Association, Shawnee, May 26, 1930.

This excess motion, results in stretching of the ligament. Due to the restricted range of motion in the sacro-iliac joint, movements of the trunk and limbs cannot be satisfactorily taken care of and a sprain results. In other words, excess motion in adjoining parts to ligaments, results in a sprain.

Pathologically, a sprain causes stretching and tearing of ligaments, a space occurs, blood fills in the defect, granulations follow and finally scar tissue is formed. This results in loss of elasticity, hardness and ultimately, abnormal relaxation.

In sprains causing low back pain, anatomically, we should consider. First, the sacrolumbar joint between the fifth lumbar vertebrae and sacrum with the adjacent areas of the osilei; second, the sacro-iliac regions with its three distinct ligaments; and third, a combination of sacro-lumbar and sacro-iliac sprain.

In the lumbosacral joint, besides the two bony structures which form the articulation, the ligaments are: (1) the strong anterior ligament along the anterior surface; (2) the smaller and weaker articular ligaments; (3) ligaments between the 4th and 5th lumbar transverse processes to the os-ilie; (4) the ilio-lumbar ligament; (5) and interspinous ligament.

In the sacro-iliac region, the anatomical structures are: (1) kidney-shaped articulation; (2) the anterior and posterior ligaments; (3) sacrospinous ligament and (4) sacrotuberous ligament.

From the above mention of anatomical parts of these regions, it is expected that forces antero-posteriorly are best able to derange the lumbosacral joint. Falls on the buttocks and violent hyperextension as well as lateral and rotatory forces may affect either or both regions.

The sacro-iliac joint is not stable. Goldthwaite and Osgood have demonstrated it's motion in the cadaver. Physiologically, it is relaxed in pregnancy and during menstruation. A degree of relaxation occurs in sleep and in recumbency when maintained for some time. This explains the frequent backache which develops following such state of prolonged recumbency. The same applies after operation where complete relaxation of the sacro-iliac joints results from the anesthetic. For the same reason as explained by Goldthwaite "night-pain" in the back is relieved by stretching, thus the lumbar spine is drawn forward.

There are many anatomic predisposing causes in the lower spine which render it susceptible to sprain. Variations and defects frequently occur, weakening the site where present. Among these are spina bifida, sacralization, long transverse processes of the 5th lumbar vertebrae, irregular articulations, hollow back and static factors.

Pathologically, several conditions are also predisposing to back sprain, some of these are: inflammatory arthritis of these joints and osteoarthritis.

How different types of motion play their roles in causing low back pain, has been considered. Now it is well to analyze the various kinds of forces and other things which actually may be considered as the true etiological factors. Primarily, when due to trauma, it is well to have demonstrated how the accident occurred, the kind of force, its direction and tendency and a study of how it probably affected the back. A rotary motion of the body downward, may be produced by throwing a stone or swinging a club. The force may be transmitted upward as in running, jumping or sliding into a base . Again the force may be carried both from above and below the lower part of the spine. This frequently is the result in car accidents.

Very common types of injury which particularly affect the lumbosacral junction are the following: falling from some distance; heavy fall of objects on the shoulders; high diving; slipping on the ice and a sudden jerk while riding a horse. Again external forces are not the only features to be considered. The attitude and posture when the accident occurs are important. As an illustration, a stout person with pendulous abdomen—the weight of which causes a lumbar lordosis with a resultant relaxation and weakness of the pelvic joints, this type of individual frequently has low back sprain.

Symptoms—the onset is either sudden as in acute trauma or insidious as in occupational sprain. In sprains of this region, there are four cardinal points: (1) a definite point of tenderness; (2) further strain or stress aggravates the pain; (3) the reverse causes relief; (4) rest causes relaxation and comfort.

1. On pressure, the point of tenderness is lessened when the sprain becomes chronic.
2. With motion to accentuate the

pain in acute cases, the opposite may result in chronic stages when secondary complications may result.

3. In faulty methods for immobilization, no pain relief occurs. The method may not be complete or not properly applied.
4. In studying these cases, the ligaments should not be considered alone. The muscles and nervous complexes which frequently are present, should be closely scrutinized.

Local Pressure. In sacro-iliac sprain, the pain is found medial to the posterior inferior spine of the ilium. In the sacrolumbar region, if the tenderness is in the midline, it denotes the interspinous ligament; if more laterally, it means the ilio-lumbar ligament. When the sacrotuberous and sacro-spinous ligaments are affected, tenderness is present from the sides of the sacrum to the spine or the tuberosity of the ischium. Radiating pain is frequently present with either condition. This results from the proximity of the scarolumbar plexus and the sympathetic nerve plexus. Especially is this true in sacro-iliac conditions.

There are three kinds of radiating pains and these may occur either singly or more than one. First: (and the least common) is the gluteal nerve radiation. This is found across the upper part of the buttocks.

Second is the lumbar radiation which appears along the front and sides of the thighs as well as on the inner side of the leg.

Third, (and most common) is the sciatic radiation which follows the course of the sciatic nerve on the back of the thigh and anterolateral surface of the leg and foot.

Posture. On examination, the patient assumes the position of relief. In sacrolumbar sprain, this is in hyperextension and is due to the rigid lumbo-sacral muscles. In bilateral sacro-iliac sprain, the position is of flexion of the spine which results from the tense iliopsoas muscles. In unilateral sacro-iliac sprain, there is partial forward bending of the spine with the thigh slightly flexed in the affected side.

Mobility. This is examined by three methods, i.e., standing, sitting and lying-down positions.

Standing: In lumbosacral sprain, forward flexion is done with the back rigid, the movement being carried on mostly by the hips, while in the sacro-iliacs, it is done with less effort. Hyperextension in lumbosacral sprain is not painful, while in sacro-iliac sprain, it is very limited and painful. Rotation is not affected in sacrolumbar sprain, while on the other hand, it is in the sacro-iliac affection.

Sitting: Flexion in the sacrolumbar type is very limited while in sacro-iliacs it is not. Hyperextension is limited in the lumbosacral sprain and still more so in the sacro-iliacs. Rotation causes no trouble in the lumbosacral sprain, while in sacro-iliac sprain it does, as the hips are fixed and therefore is more limited than on the standing position.

Lying Down: Flexion—in lumbosacral sprain, the lordosis remains constant while in the sacro-iliac, it disappears. Extension, lateral and rotary movements do not differ from those in the sitting position.

Passive Motion: In the examination for this, many special signs are used—these only will be mentioned: Forcible compression of the iliac crests; Lauguere's sign; Straight leg-raising sign; Goldthwaite's and Gaenslen's sign. One sign we employ in our institution is a simple method of specially detecting a sacro-iliac sprain which is carried out by the patient himself and therefore makes it more practical. It consists as follows: The patient, while standing, is told to lift one foot by grabbing the foot with opposite hand. In doing so, the thigh is flexed, abducted and externally rotated, placing stress and tension in the sacro-iliac joint of the side on which the foot is being lifted. At the same time, the other sacro-iliac joint being fixed by the weight of the body on that leg.

In the differential diagnosis, five things are especially of importance. These are: fractures, chronic arthritis, neurosis, exaggeration and malingering, and organic diseases of the spine such as tuberculosis and malignancy. A complete history, thorough examination and good X-rays should eliminate them.

Treatment: This may be classified as either conservative or operative. The conservative again may be divided into recumbent and ambulatory.

The recumbent treatment is indicated in acute painful cases with or without radiating pains. The patient is placed in a bed with a non-sagging mattress and the

lower limbs flexed. These are gradually extended as the muscles become relaxed. In sacro-lumbar sprain, a support should be placed under the lumbar spine. Traction may then be applied in certain cases until relief of muscle spasm results.

Ambulatory Treatment. This may follow recumbent treatment, or else is carried out in moderate acute cases; also in chronic cases without deformity. Several methods may be employed.

Strapping. This is applied either with adhesive or moleskin plaster for immediate relief. The method of application varies with the type of sprain. In sacro-iliac sprain, the support should be applied across and around the iliac crests so that complete fixation is obtained. In the lumbosacral sprain, the strapping should be crisscrossed from the shoulder on one side across the back and to the side of the thigh on the other side. The strapping should be applied in the position of relief.

Belts. For sacro-iliac sprain, this is applied low and should be of a supporting nature so that the iliac crests are firmly supported or girdled. In the lumbosacral involvements, the belt should reach higher. Belts may be used in subacute or mildly acute cases.

Braces. When the support or appliance is needed for a long period of time in chronic cases, a brace may be required. In these cases the type and kind will depend not only on the condition present but also on the choice of the surgeon and taste of the individual.

Casts. A plaster-of-paris jacket is frequently used in acute cases after the period of recumbency. It is essential in those cases where immobilization must be complete of the whole spine and pelvis. The cast must be well fitting and strong.

Manipulation is indicated and chronic cases with adhesions or in those unusual ones where a sacro-iliac subluxation occurs. Again it is indicated in some perisistent sacro-iliac cases with complicating sciatica where nerve stretching under anaesthesia is necessary.

Physical Therapy. Most cases of back sprain become dissatisfied because the average physician will only treat them by strapping. With physical therapeutic agents, you not only do something for the individual but when carried out properly it is our best method of relief. When prescribed, it must be carried out by a well trained technician. The usual method is heat, either infra-red or diathermy. Usually the latter is most effective, and is then followed by massage. The massage should be of a scientific nature and not a rub-down. This should be given for at least 10 minutes following the application of heat. Medical gymnastics may also be indicated in subacute and chronic cases. With well supervised physical measures, the period of disability in low back pain is greatly decreased as well as the degree of discomfort.

Operative Treatment. In chronic cases, where all known measures have failed, open surgery may be of necessity, employed. In cases of impingement of the fifth lumbar transverse processes upon the osilei, surgical removal may be indicated. The same applies in painful backs due to sacralization.

Again fusion operations of the sacro-lumbar and sacro-iliac articulations for mobility with pain in chronic relaxed ligamentous structures, gives promise of permanent relief.

CASE REPORT—AGRANULOCYTIC ANEMIA WITH RECOVERY*

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Our program committee chose this case, I presume, because recoveries from this malady are rare. Those associated with sepsis have a mortality of about 93 per cent. The cases occurring during antiluetic treatment have a mortality rate of about 45 per cent.

Late in the last century men had noted blood counts very low in granular or "poly" cells. Aleukemic leukemia, aplastic anemia, infectious mononucleosis, and various poisons were given as diagnosis.

Schultz in 1922 described a group of cases with severe gangrenous stomatitis and unusual blood pictures occurring in women with negative past histories.

To this condition he gave the name agranulocytic angina.

As more cases were studied it was found that necrosis which followed the blood changes may be encountered in various organs. The disease more often occurs without previous history but may follow or be

*Read before Staff Meeting St. John's Hospital, Tulsa, Oklahoma, November 18, 1930.

associated with other illness. Men are affected although less frequently than women. The age range is large.

The characteristic blood picture is a marked reduction or absence of granular cells, a low total leukocyte count, a relative but not an absolute increase in the lymphocytes, an actual increase in the reticulo-endothelial cells, and little or no change in either the platelets, red cells, or hemoglobin unless there is oozing of blood or hemorrhages. The coagulation time is usually unchanged even in the bleeding cases.

The onset in septic cases is marked by high fever, 100 to 105 degrees. Nearly all have sore throats and, in decreasing percentages, malaise, exhaustion occurring early, dysphagia, chills headaches, myalgia, herpes, and bleeding. You will recall one case of bleeding in this hospital. Jaundice develops in about 60 per cent of the cases, commonly coming on after the onset or late in the disease.

With few exceptions, we can say that the course is short, the decline is rapid, and death the outcome.

The toxin or toxins seem to attack the hemopoietic system after the cells are differentiated and the greatest destruction is in the granular cell group. These latter cells may disappear entirely from the circulating blood before death. Microscopic study of the bone marrow shows it to be poor in cell structure with a predominance of lymphocytic and endothelial cells. You will recall the pathological reports on two autopsies done in this hopsital last year.

The regions affected show very little cell reaction with an absence of polynuclear cells. The various organs, as spleen, liver, lymph-nodes, show a hyperplasia of endothelial cells. These cells show a phagocytosis of cell debris as if attempting to take over the work of leukocytes. Contrasted with the picture of leukemia, there is no increase in lymphocytes and there is no lymphocytic infiltration of the organs. There is, however, infiltration of the organs with endothelial cells. Leukemia is not characterized by an endothelial cell proliferation.

Some of you will recall that in 1927 I reported a fatal case in this hospital. The patient was a man past 60. The polynuclear cells disappeared completely from the blood stream. At that time the literature was very meager. Since then, exhaustive articles have appeared. Now, a bibliography would fill pages. Since my first recognized case, I have seen several in company with other physicians.

The case presented to-night is that of a woman, graduate nurse, single, 39 years of age, well developed and nourished. She was seen at the office, August the 18th. The complaint was uterine bleeding. Until two years ago the periods had been regular. This was followed by prolonged irregular periods. Last winter a curettement was done in a neighboring city. She did not menstruate in February or March of this year. She flowed all of April and at short intervals since that time.

The salient points in the past history are: an appendectomy with some minor pelvic work twelve years ago, a cholecystectomy four years ago. She denies the occurrence of sore throat. The mother and both grandmothers passed the menopause at the age of 45, 32, and 35 respectively. Hemorrhage was troublesome at the time of the former operation and she fears surgical work. At the time of the first visit, the uterus was found to be slightly enlarged and apparently of the fibrous type.

August the 26th she was given 800 milligram hours of screened radium intrauterine. Until recently there has been no bleeding when a small amount was noticed, this latter apparently being menstruation.

The evening of August 31st she was seen at her home. She had a very sore throat, the mucous membrane was red, granular, and somewhat edematous. The tonsils, especially the right, were swollen and red and a thin membrane was found on the right side. The temperature was 102½. Speech was muffled; swallowing was very difficult. Smears and cultures were negative for diphtheria. A short chain streptococcus was found to predominate. She appeared toxic. Headaches, muscle pains, and angina were marked.

Rest in bed, frequent hot saline gargles, and antipyretics were instituted. A blood count the following morning showed a leukocyte count of 5,200 with 41 per cent polymorphonuclears. Dr. Davis examined the the throat. She entered the hospital September 2nd. At this time the right tonsil was greatly swollen and two crypts were filled with a dark tough adherent membrane. There was an offensive odor. The left was less affected. One might consider this a good case for diphtheria antitoxin. The smears and cultures were similar to

those taken at the home except that spirilli were found.

She was given large frequent throat irrigations of hot saline. This was accomplished by gravity, and the solution was used unsparingly. Local applications of 2 per cent mercurochrome and 15 per cent neosilvol were used, I believe, from a sense of apparent therapy and probable respect for tradition. Care was taken not to use strong irritants, corrosives, or escharotic chemicals.

That night the left tonsil developed a necrotic membrane. Symptomatic treatment was followed. Fluids were forced and nourishment was insisted upon to prevent acidosis. The chloride content of the blood was noted. The patient was given a transfusion of 500 cc. of whole blood.

The following day the right tonsil began to clear up. Swelling reduced rapidly. In twelve hours the left began to clear. The blood picture improved. Copper and iron tonic and a nourishing diet were given. Improvement was rapid. The patient went home on the fifth day against advice.

This case never reached a complete agranulocytosis but the symptoms were so typical,the blood decline so rapid, that we felt that a diagnosis could be made.

The patient, who is now walking into the room, looks well. The picture is a contrast to the one many of you saw in the room down stairs a few weeks ago. She still has her tonsils. She says that the recent trouble was the first time she has had any trouble with the tonsils and that she is fearful of hemorrhage if a tonsillectomy is done. She has been told that cases are on record where apparent recoveries have been followed by recurrences. She knows the gravity of the disease.

I must express my appreciation of the prompt, efficient and enthusiastic work of the laboratory department in the numerous examinations that were made. Extensive blood studies were done including several blood chemistry estimates. Time will not permit discussion of all of the serological and cytological reports. The blood pictures are submitted in outline form.

BLOOD COUNTS

Date	Total Leukocytes	Total Red Cells	Hemoglobin	Basophiles	Eosinophiles	Myelocytes	Young Forms	Band Forms	Segementers	Lympho-cytes	Monocytes	Unidentified	Peroxidase	Non-Peroxidase	Cooke Index	Coagulation Time
9-2-30	8950	3180000	60	0	0	2	5	7	1	40	7	36	30	70	1.05	5'
9-3-30	7200	2170000	40	0	0	1	3	5	2	34	13	37	16	84	1.12	4' 30"
9-4-30	5500	3060000	50	0	0	0	7	8	0	51	3	31	13	87	1.00	4'
9-5-30	5350	3610000	60	0	0	0	1	19	4	62	3	11	33	67	1.76	3'
9-6-30	9800	3760000	70	0	1	0	1	21	17	54	4	2			1.48	2' 30"
9-7-30				0	0	0	0	28	26	29	17				1.96	

DISCUSSION: *E. Rankin Denny, M. D.*, Tulsa.

Dr. Smith has emphasized an important point, that of removing an obvious source of infection: namely, the tonsils. This is important because of a probable recurrence of the agranulocytic factor. I should like to call attention to a case reported by Rutledge, Hansen-Pruss, and Thayer in the Johns Hopkins Hospital Bulletin. This case is unique in tomes of medicine in that it was one of cyclic recurring agranulocytic angina without anemia. This case has been under observation by various observers over a period of twenty years. It was seen first at the age of two and a half months by Leale of New York, at which time there was a condition of furunculosis, intermittent fever, and leukopenia with a marked reduction of the granulocytes. A few months later Dr. L. E. Holt saw the child and noted during another attack the swollen, red gums, fever, and jaundice. The case was labelled at this time Vincent's infection. At that time the attacks were occurring at about three weeks intervals.

In 1916 at the age of 8 he had three at-

tacks during the summer. When he was 11 years old he was observed at the Harriet Lane Home of the John Hopkins Hospital. During one of his attacks, Vincent's organisms were isolated and the typical blood picture was observed. In 1928 the authors observed him while he was suffering several attacks. The outstanding observation made at that time was the effect of the blood serum of the patient on leukocytes of the same blood grouping. It was observed that shortly before the onset of an attack, normal leukocytes when mixed with the patient's serum lost their motility and underwent lysis. Monocytes and lymphocytes were not affected. Observation regarding this characteristic on further cases would be desirable.

Recurring agranulocytosis has been reported but this is probably the first instance recorded where anemia has not been a part of the picture.

DISCUSSION: *I. A. Nelson, M.D.,* Tulsa.

At the meeting of the American Society of Clinical Pathologists held in Detroit last June, blood dyscrasia with particular emphasis upon agranulocytosis was liberally discussed. I should like to repeat in substance the comments of Dr. R. M. Keilty made at that meeting. He has taken the attitude that every case of sore throat associated with leukopenia and anemia (instead of the usual leukocytosis) is a potential agranulocytosis. Without waiting for the full differential classification of the ultimate blood picture, he immediately begins continuous local mild treatment. He does not consider that one can foretell just what medicament will inhibit bacterial activity, and he consequently uses gentle swabbing at 15 minute intervals over a period of six hours with one drug and then for the next six hour period uses another. One case cited by him did not show any improvement until a mild boric acid solution was used more than 36 hours after beginning treatment.

Dr. Keilty's treatment may seem heroic. Dr. Smith's case most certainly was treated heroically. However, when compared with previous cases that we have observed and when the mortality rate is compared and when we see this patient as she is today, such treatment in further cases seems most essential.

PNEUMOCOCCIC EMPYEMA

Nine cases of pneumococcic empyema treated by intrapleural injections of ethylhydrocupreine hydrochloride are reported by Harry Lowenburg, Philadelphia (Journal A.M.A., July 13, 1929). All the patients received intrapleural injections of ethylhydrocupreine hydrochloride (optochin). In four of them rib resection and drainage were done after from four to six injections of ethylhydrocupreine hydrochloride. All recovered completely after operation. Five patients were not treated surgically but made complete nonoperative recoveries. The mortality in the nine cases was nil. In those patients who recovered without surgery there was a gradual subsidence of fever with improvement in the physical signs. Those cases which were diagnosed late, and in which fever was slight or entirely absent, did not show any increase in temperature. Before the physical signs improved it was noted that in the favorable cases the pleural exudate, which sometimes reaccumulated before final recovery, thus accounting for the persistence of the physical signs, underwent a retrogressive change; the pneumococci, too, became decidedly less and were less viable on culture, and in some cases did not grow at all on culture, although they were recoverable by direct smear.

MASSIVE ATELECTASIS AND POSTOPERATIVE PNEUMONIA

Routine hyperventilation during or at the close of operation has greatly diminished the incidence of massive atelectasis and probably also the other serious postoperative pulmonary complications in the series of cases studied by W. J. M. Scott, Rochester, N. Y. (Journal A.M.A., July 13, 1929), over a period of more than two years. Therapeutic hyperventilation early in the course of those cases in which massive atelectasis does develop produces immediate striking benefits, both clinical and roentgenologic, and when followed by postural treatment has cleared up the uncomplicated cases within a very short time. No patient in the series so treated have had any important symptoms of massive atelectasis for more than from twenty-four to forty-eight hours, whereas it was common before the institution of these measures for the serious symptoms to extend over a period of a week or more. On account of the difficulty in determining the exact limits of postoperative pneumonia, Scott does not have statistical evidence of its benefit either as a prophylaxis or a treatment for post operative pneumonia. However, it appears quite clear that such postoperative pulmonary complications without cardiac displacement are fundamentally similar in origin to those in the group which has been submitted to statistical study, and there is assurance that cases of postoperative pneumonia not falling in this group of massive atelectasis show at least symptomatic benefit from hyperventilation with carbon dioxide. Previous studies have shown that the incidence of postoperative pulmonary complications is much higher in two groups of operative cases: (1) those in which the operative incision is located in the upper part of the abdomen, and (2) those in which for any reason there is a diminished vital capacity. Consequently in these two groups of patients particularly it seems desirable to carry out prophylactic hyperventilation with carbon dioxide, the procedure to be repeated early if any symptoms suggesting the development of postoperative pulmonary complications arise.

THE JOURNAL

OF THE

Oklahoma State Medical Association

Issued Monthly at Muskogee, Oklahoma, under direction of the Council.

VOL. XXIV JANUARY, 1931. No. 1

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Entered at the Post Office at Muskogee, Oklahoma, as second-class mail matter July 28, 1912.

This is the official Journal of the Oklahoma State Medical Association. All communications should be addressed to The Journal of the Oklahoma State Medical Association, Barnes Building, Muskogee, Oklahoma. $4.00 per year; 40c per copy.

The editorial department is not responsible for the opinions expressed in the original articles of contributors.

Reprints of original articles will be supplied at actual cost, provided requests for them is attached to manuscripts or made in sufficient time before publication.

Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in the Journal, the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the editor, Barnes Building, Muskogee, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes in address, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application. It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

PRINTED BY HOFFMAN-SPEED PRINTING CO., MUSKOGEE

EDITORIAL

REASON IN PRACTICE

The physician should at all times attempt to have a logical course, based upon pure reasoning as a basis or incentive for his treatment and management of a case. Even though treatment is administered solely through the agent of the simplest placebo, sound reason should prompt it. Such treatment, if indicated is often as important, so far as the individual case is concerned, as is precise indicated surgery or exact specific medication.

Certainly there is no place, time, indication or excuse for guess work or careless neglect in the handling of a case. It is far better for a physician, confronted with uncertainty as to which course he should pursue, to frankly admit the situation to himself, so advise his patient, and either call for consultation or dismiss the case to other hands.

The writer's attention is often called to criticism of the entire medical profession, over some reported act of an individual physician, which has either never occurred, has been grossly misinterpreted, or, if true was carried out without logic, and obviously prompted by mere guess work. In the course of the year it has been the writer's position to hear literally hundreds of statements as to the findings, opinion or course of treatment of cases. The stories heard are sometimes unbelievable and impossible of squaring with the facts in the case. As a rule, however, the patient has obviously misunderstood the statement made by the physician. Often the statements are deliberately misinterpreted to favor the patient's hopes and wishes; this is especially true in insurance and industrial cases, and in this connection the wide range of imagination of the neurotic patient must be borne in mind; it must be remembered *that any statement* to this type of case may have potential dangers, this too, regardless of painstaking explanation. In these cases it is probably best to say as little as possible, though they may be very favorably affected and benefitted by very positive statements or advice as to the course they should follow. On every occasion, however, the physician's course should stand four square with his best judgment and have behind it a clear rationale. We are seeing far too much delay in the handling of dangerous cases, which, too often can only be attributed to non-appreciation of the gravity. Despite the advance of modern medicine and surgery we still see too much prescribing of laxatives and cathartics in dangerous, acute, abdominal conditions, too little attention to the cause behind a rapid pulse, fatigue, loss of weight, too much "symptomatic" treatment of headaches, which may be based upon any one of a score of fixed disease entities and we still see "malaria" treated when it is some other disease.

The physician should follow, or attempt to follow a well ordered course in diagnosis and then the applicable course for control. The well balanced physician often finds himself justified in wholly disregarding laboratory findings, and treating the

case solely upon clinical findings; conversely, he is often warranted in following the leads given by his laboratory findings. But in all cases he should base his actions and prescriptions upon sound common sense and reason as may be applied to the problems at hand.

AVERTIN, NOT ACCEPTED BY THE COUNCIL

The preliminary report of the Council on Pharmacy and Chemistry of the American Medical Association, (Journal of the A.M.A., November 8, 1930, page 1427) states that the Council recognizes the fact that Avertin presents certain desirable properties, but definite action concerning its recognition was postponed pending the result of investigations of certain of its side actions now being conducted. Apparently Avertin, very early in its history, achieved an undesirable reputation, for in April, 1927, at the German Surgical Congress at Berlin, thirteen deaths were reported and though Avertin was not blamed for all of the deaths, such severe criticism by numerous surgeons at the meeting was made that it was temporarily withdrawn by the manufacturers.

Inasmuch as a great deal has been written about the use of Avertin, we believe it well to set down the advantages and disadvantages of the drug as named by the Council: They are as follows:

"The advantages claimed for Avertin liquid include: 1. Absence of so-called psychic shock or mental distress (almost unanimous). 2. Absence of irritation of the respiratory tract with less postoperative bronchitis and pneumonia. 3. Absence of direct injurious action on the heart, kidneys and other organs, with the possible exception of the liver. 4. Convenience for operations about the face, especially when a cautery must be used. 5. Usefulness in long operations when deep anesthesia is not necessary. 6. Less frequent vomiting than after ether or chloroform. 7. Lasting sleep after operation, frequently making it unnecessary to use morphine for the relief of postoperative pain. 8. Amnesia. 9. Absence of injury after repeated administration (as in tetanus). 10. Rapid elimination (implying less toxic action). (It should be understood that publications concerning "Avertin" refer in part to Avertin alone, and in part to Avertin liquid containing amylene hydrate).

The disadvantages include: 1. Higher death rate than after ether. 2. Depression of respiratory center. 3. Depression of circulation. 4. Acidosis as actively as after chloroform. 5. Insufficient muscular relaxation in laparotomy (?). 6. Falling back of tongue, making constant observation necessary until the patient is fully conscious. 7. Lack of control from moment to moment (almost unanimous). 8. Want of exact dosage. 9. Narrow zone between anesthetic and fatal dose. 10. Disadvantages inherent in mixed narcosis. 11. Lack of adequate pharmacologic study of Avertin and its synergistic action with morphine, ether and other substances. 12. A lack of agreement concerning the indications and contraindications."

The Council believes, that the present evidence indicates that Avertin may prove of value as a means of initiating narcosis, that is, (so-called basis narcosis) but not for complete narcosis. Therefore admission is withheld until certain satisfactory studies of its properties have been made; until the contraindications have been satisfactorily established; until a generally accepted technic has been established; and until the advertising has been revised to omit misleading statements in connection with its use.

THE DIAGNOSTIC LABORATORY

Sometime ago the Journal received a circular advertising the Diagnostic Laboratory, P. O. Box 1828, Tulsa, this from one of our members. Later an inquiry came from Texas as to the reliability of the laboratory. This laboratory proposes that you select the most stubborn case. "From this case take a blood smear about the size of a half-dollar on a piece of Haemoglobin paper and let it be untouched by any hands. Protect it with a bit of cotton and mail to us. Indicate whether taken from male or female, age, chronic or acute case, together with your case number for future identification. We will send you a complete diagnosis of the case from which the blood is taken. This may seem impossible, impractical, unreasonable, et cetera, but remember you are to be the sole judge as to its accuracy."

We think this is enough to say about this Laboratory. The writer has undertaken to ascertain whether any physician has any connection with it, but the sponsors for this wonderful diagnostic aid do not

wish to disclose their connection, if any; they stated that they wished the proposition to stand solely on its *merits*.

We hardly believe any physician will be gullible enough to find himself allied with such matter.

—o—

Editorial Notes—Personal and General

DR. E. S. FERGUSON, Oklahoma City, our President, spent the holidays in Cuba.

DR. J. C. BUSHYHEAD, Claremore, who was injured some two weeks ago is reported improving.

DR. HENRY H. TURNER, Oklahoma City, is at home after three months post-graduate work in Neurology, in Vienna and London.

DR. J. N. CROSS, Cheyenne, will leave the first of the year for Tulane University, New Orleans, where he will take post-graduate work for three months.

LATIMER COUNTY MEDICAL SOCIETY elected the following officers for 1931: Dr. T. L. Henry, president; Dr. E. B. Hamilton, secretary, both of Wilburton.

ATOKA COUNTY MEDICAL SOCIETY elected the following officers at their regular meeting held December 29th: Dr. J. S. Fulton, president; Dr. C. C. Gardner, secretary, both of Atoka.

GREER COUNTY MEDICAL SOCIETY met December 12th and elected Dr. J. T. Lowe, Mangum, president; Dr. G. W. Austin, Mangum, vice-president; Dr. J. B. Hollis, Mangum, re-elected secretary.

DR. AND MRS. H. W. FORD, Tulsa, received injuries, more or less painful, in an automobile accident west of Muskogee in December. Dr. Ford, it is said, received very painful injuries which will prolong his convalescence.

GARFIELD MEDICAL SOCIETY held their annual meeting December 18th, and elected the following officers: Drs. S. H. McEvoy, president; C. W. Tedrowe, vice-president; John R. Walker, re-elected secretary-treasurer, all of Enid.

MARSHALL COUNTY MEDICAL SOCIETY met December 9th for their regular meeting. The following officers were elected: President, Dr. P. F. Robinson, Madill; Vice-President, Dr. W. D. Haynie, Kingston; Secretary, Dr. J. H. Veazy, Madill.

JACKSON COUNTY MEDICAL SOCIETY met December 19th in the office of Dr. E. A. Abernathy, for election of officers of 1931: Dr. E. S. Crow, Olustee, re-elected president; Dr. J. B. Hix, Altus, vice-president; Dr. E. W. Mabry, Altus, re-elected secretary and treasurer.

PUSHMATAHA COUNTY MEDICAL SOCIETY elected the following officers at their meeting held in December: Dr. D. W. Connally, Clayton, re-elected president; Dr. John S. Lawson, Clayton, re-elected secretary. Drs. G. E. Colby, Darwin; E. S. Patterson, Antlers; and B. M. Huckabay, Antlers, were named censors.

OTTAWA COUNTY MEDICAL SOCIETY elected the following officers at their meeting, December 19th: President, Dr. F. V. Meriwether, Miami; 1st vice-president, Dr. General Pinnell, Miami; 2nd vice-president, Dr. B. F. Ralston, Commerce; 3rd vice-president, Dr. R. H. Harper, Afton; Secretary-Treasurer, Dr. W. G. Chesnut, Miami.

PITTSBURG MEDICAL SOCIETY held its annual meeting December 5, 1930. The following officers were elected: President, Dr. W. W. Sames, Hartshorne; Vice-president, Dr. W. C. Wait, McAlester.; secretary-treasurer, Dr. F. L. Watson, McAlester. Censors, Drs. F. J. Baum, T. H. McCarley and J. C. Johnston, all of McAlester.

TULSA COUNTY MEDICAL SOCIETY elected the following officers at their annual meeting, in December: Dr. Henry Browne, president; Dr. Fred Bolton, vice-president; Dr. Carl F. Simpson, re-elected secretary-treasurer; Dr. C. J. Woods, dermatologist, was elected president for 1932, it being the policy to elect the president a year in advance.

GARVIN COUNTY MEDICAL SOCIETY met December 17th in the office of Dr. W. P. Greening for the purpose of electing officers for the ensuing year. They were as follows: Dr. L. P. Smith, Elmore City, president; Dr. Ray Lindsey, Pauls Valley, vice-president; Dr. J. R. Callaway, re-elected secretary. Dr. Hugh Monroe, Pauls Valley, delegate.

CREEK COUNTY MEDICAL SOCIETY met December 4th and elected Drs. C. L. McCallum, Sapulpa, president; John Wells, Bristow, vice-president; G. C. Croston, Sapulpa, secretary-treasurer. Dr. W. A. Howard, Chelsea, councilor of district number six, was present and gave a very interesting and instructive talk on "Organized and Progressive Medicine."

McCURTAIN COUNTY MEDICAL SOCIETY met December 23rd. Dr. A. W. Clarkson, Valliant, read a paper on "The Treatment of Pneumonia," and Dr. N. L. Barker, Broken Bow, read a paper on "Scarlet Fever." The following officers were elected: Dr. R. D. Williams, president, Idabel; Dr. J. T. Moreland, vice-president, Idabel; Dr. R. T. Sherrill, secretary, Broken Bow.

BRYAN COUNTY MEDICAL SOCIETY met December 10th, electing Dr. John T. Wharton, Durant, president; B. B. Coker, Durant, vice-president; Dr. Jas. L. Shuler, Durant, secretary. Censors: Drs. H. B. Fuston, Bokchito; W. A. Houser, and John A. Haynie, Durant. Drs. Wharton and Haynie, both of Durant, and A. J. Wells, Calera, were named delegates to the State Medical Association meeting.

MUSKOGEE COUNTY MEDICAL SOCIETY met December 8th for their annual election of officers for 1931. The following were named: Dr. Wm. Pat Fite, Muskogee, president; Dr. A. L. Stocks, retiring president, was named president emeritus. Dr. L. C. McAllister, vice-president; Dr. E. H. Coachman, secretary; Drs. J. G. Rafter, H. T. Ballantine, and J. S. Fryer, will serve on the board of censors, all of Muskogee.

WOODS COUNTY MEDICAL SOCIETY met in Cherokee, November 25th, in connection with Alfalfa County Medical Society. Dr. C. E. Ross, Wichita, gave a paper on "Poliomyelitis." A banquet was served after the business session. The following officers were elected: President, Dr. John E. Hammer, Kiowa, Kansas; Dr. L. O. Rogers, Alva, vice-president; Secretary-Treasurer, Dr. O. E. Templin, Alva, Oklahoma.

PAYNE COUNTY MEDICAL SOCIETY met in December and elected the following officers for 1931: Dr. C. E. Sexton, Cushing, president; Dr. T. A. Love, Cushing, vice-president; Dr. R. E. Roberts, Stillwater, secretary; Dr. W. N. Davidson, Cushing, delegate; Dr. H. C. Manning, Cushing, alternate. Censors: Drs. L. R. Wilhite, Perkins; D. L. Perry, Cushing; W. B. Hudson, Yale. Committee on Public Policy, Dr. R. J. Shull, Stillwater.

PONTOTOC COUNTY MEDICAL SOCIETY met in Ada, December 3, 1930, for their regular monthly meeting. The following officers for 1931 were elected: Dr. E. A. Canada, president; Dr. O. H. Miller, vice-president; Dr. W. F. Dean, secretary-treasurer; censors, Drs. O. E. Weldon, M. C. McNew and Catherine Brydia. Interesting papers were read by Dr. O. H. Miller, entitled "Headaches Due to Conditions of the Eyes, Ears, Nose and Throat," and Dr. E. A. Canada, entitled "Eclampsia."

THE MARK FINSTON FUND. Mr. Mark Finston, Tulsa oil man, has established a fund for use in St. John's Hospital, Tulsa, for research work in hematology. This fund has been provided for studying blood changes in various diseases, working out specific problems in blood dyscrasias. The amount of the fund is not announced, but it is understood that additions to the sum will be made as conditions demand. So far as is known this is the first research fund established in the State of Oklahoma.

LINCOLN COUNTY MEDICAL SOCIETY met at Chandler December 3rd. Dr. C. B. Barker, Guthrie, lectured on "Suppuration of the Middle Ear." The lecture was illustrated with motion pictures and slides. After the lecture the following officers were installed for 1931; President, Dr. J. S. Rollins, Prague; vice-president, Dr. W. D. Baird, Stroud; Secretary-Treasurer, Dr. F. H. Norwood, Prague. Censors, Drs. U. E. Nickell, Davenport; A. M. Marshall, Chandler; H. B. Jenkins, Tryon. Delegate, Dr. A. M. Marshall and Alternate, Dr. J. W. Adams, Chandler.

SOUTHERN OKLAHOMA MEDICAL ASSOCIATION held their 9th quarterly session at the Chamber of Commerce Building, at Pauls Valley, Tuesday, December the 9th. The attendance was approximately 120. The following program was rendered: Address of Welcome, Hon. Mac Q. Williamson; Response, Dr. F. A. Harrison; Mild Hypothyroidism, Dr. A. B. Leeds, Discussion opened by Drs. B. H. Cooley, C. J. Fishman and O. W. Sprouse; Diarrhea of Children, Dr. R. M. Anderson. Discussion opened by Drs. R. H. Lindsay and F. A. Harrison; Otitic Abscess of the Brain, Dr. W. T. Salmon. Discussion opened by Drs. H. C. McNew, L. C. McHenry and A. L. Guthrie; Early Carcinoma of the Cervix, Dr. J. F. Kuhn. Discussion opened by Drs. H. P. Wilson, A. R. Sugg and H. M. McClure; Neuro-Syphilis, Dr. C. P. Bondurant. Discussion opened by Dr. D. W. Griffin; Fantasy, Day Dreams and Dreams, Dr. M. S. Gregory. Dr. J. I. Hollingsworth was elected President-Elect and Dr. J. W. Nieweg was re-elected secretary-treasurer.

DOCTOR JOSEPH A. PATTON

Dr. J. A. Patton was born March 10, 1868, in Oxford, Mississippi, and died at his home in Stilwell, December 5, 1930.

His preparatory education was at Presbyterian College, Clarksville, Tenn. Graduated in Louisville, Ky., Medical College, June 22, 1892. Began practice of Medicine at Evansville, Arkansas, 1892. He moved to Stilwell, April 16, 1896, served as County Superintendent of Health since statehood, member of State Medical Association and Secretary of Adair County Medical Society.

Dr. Patton is survived by his widow and five children.

Interment was made at New Hope cemetery, Stilwell, after Masonic services.

DOCTOR EVERETT G. NEWELL

We, the undersigned committee of the Payne County Medical Association, extend to you for ourselves and our associates our profound sympathy and condolences in this, the great crises of your life in the loss of your husband.

We know how hard it is to gild a grief with words and how inadequate language is to express our feelings. We but do the best we can.

Dr. Newell was a man among men—a true and loyal physician, a comfort to the poor, and a help to many. While oftentimes he was more sick than those he comforted, yet he gave of himself freely. He fought a brave fight and kept the faith. He filled his niche, and in departing, has left to all who knew him a fragrant memory of a life well lived—a duty well and bravely done.

We are resolved that this letter shall be spread upon the minutes of our association in memory of him.

Respectfully,

J. T. GRAY,
R. J. SHULL,
D. J. HERRINGTON,
Committee.

DOCTOR E. E. POYNOR

Dr. E. E. Poynor, Stilwell, died November 11, in Louisville, Ky., where he was attending a medical meeting.

Dr. Poynor was born in Osage, Ark., in 1881. He graduated from the University of Arkansas Medical School in 1904. He came to Stilwell in 1927, where he was a resident until the time of his death.

He is survived by his wife and four children.

The body was shipped to Green Forest, Arkansas, where interment was made.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M.D
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Heliotherapy in Relation to the Treatment of Tuberculosis of the Spine in Children. Ralph K. Ghormley, J. Am. Med. Assn., LXXXVIII, 289, January 29, 1927.

Paper based on sixty-three cases treated at the New England Peabody Home for Crippled Children, Newton Center, Mass.

Progress records:

1. Spine tracings made at six weeks' intervals.
2. Weight chart, record made monthly.
3. Anteroposterior and lateral X-rays at four months' intervals.

Fixation: By means of a split plaster jacket applied on a Goldthwaite frame. This permits removal for heliotherapy and supports when the child is permitted up for play.

Deformity is improved when possible and may be expected when the case is treated early and involves the lumbar and lower dorsal regions.

Effect of Heliotherapy: Combined with rest and good food results in increased resistance, gain in weight, and hastening of calcification in the diseased bone. Patients are notably better at the end of the summer period with sixty-three per cent of sunshine, than they are following the winter period, which at Boston has only forty-eight per cent of possible sunshine hours. Artificial quartz light therapy is substituted on cloudy days, but is of doubtful value.

The author stresses the importance of the weight chart, deformity tracings and roentgenograms.

A Clinical and Statistical Study of Chronic Arthritis Based on Eleven Hundred Cases. Ralph Pemberton and E. G. Pierce. Am. J. Med. Sc. CLXXIII 31, 1927.

Clinical observations on 700 cases in civil life are compared with similar observations on 400 cases among soldiers. In civil life the onset was gradual in more than half of the cases and the knee was the site of most frequent involvement in all groups of both sexes. Foci of infection were present in about seventy per cent of both groups but in 100 consecutive cases of disease at large admitted to the medical service of the Presbyterian Hospital, Philadelphia, more than eighty-seven per cent had active foci of infection. Neoplasms, active tuberculosis, and diabetes were very rare in chronic arthritics. The blood pressure tended to be normal or low among arthritics and the disease was often associated with secondary anaemia.

Prognosis is good in all types of arthritis. Seventy-three per cent of the civilian cases were definitely improved and of these one-third recovered completely. Only nine per cent in the civilian group and four per cent in the army group were unimproved. The proliferative arthritis responded better to treatment than did the degenerative.

Unusual Cases of Poliomyelo-Encephalitis. W. A. F. Collis, Lancet I, 927, April 30, 1927.

Case 1. Boy, aged twenty-one months. Vomiting, convulsions, loss of sight for one week.

On examination: Total blindness; internal strabismus; constant, slow, upward and downward movement of eyeballs and eyelids. Rigidity of back and neck, reflexes normal, no paralysis. Temperature 104.6 degrees, C.S.F. pressure high, otherwise normal. Recovery associated with much irritability, Two months later reported change of temperature, now irritable.

Case 2. Girl, aged twenty months. Vomiting, stiffness of back and neck two days. Temperature 101.6 degrees. Knee jerk absent on left side, left leg weaker than right. C.S.F. under pressure, otherwise normal. Four weeks afterwards, child was able to sit up. Irritable during recovery.

Case 3. Boy, aged three and one-half years. Pains in back and limbs, inability to walk, irritability, five days. Temperature 99.6 degrees. Knee jerks absent, Kernig sign positive. C.S.F. under pressure contained 0.3 albumin. Four days later parens of left deltoid. In hospital six weeks. Steady improvement. Left with intention tremor resembling paralysis agitans, most marked in the hands. Very emotional.

Case 4. Girl, aged three and one-half years. Lethargy, marked stiffness of back and neck. Sudden onset three days previously. Temperature 101 degrees. Cried when touched. Kernig sign positive. Optic discs normal. Knee jerks present. Discharged as normal three weeks later,

In Case 1, most of the symptoms can be located in the mid-brain, e.g. the blindness and the eye movements. In Case 3, the subsequent tremor was the only symptom of mid-brain lesion. All the cases showed stiffness of the back and other meningitic symptons. Treatment of these cases is largely symptomatic; lumbar puncture useful for relieving pain and stiffness of the back.

ORTHOPAEDIC SURGERY

Edited by W. K. West, M.D.
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The Importance of Use of the X-ray in the Treatment of Joint Injuries. Sir Robert Jones and Robert W. Lovett. Textbook on Orthopedic Surgery, Page 7.

The surgeon who undertakes the responsibility of treating a joint injury without examining a good X-ray assumes a very great risk and it is often a safeguard to have an X-ray of the joint of the other side for purposes of comparison. In so-called sprains which have persisted, one finds a

fair proportion of cases with fracture. In the hand, fractures of the phalanges and metacarpals are very common, and Colles' fracture and fractures of the carpal bones are constantly overlooked; in the shoulder one often finds an avulsion of the insertion of the supraspinatus. In the foot, fracture of the 5th metatarsal often escapes notice, as well as the tearing off of the tip of the inner malleolus; and fracture of the os calcis is not always recognized. At the knee, avulsion of the tibial insertion of the crucial ligaments may be found. As for the hip, bending of the neck of the femur in children, especially, constantly escapes observation.

Patients are very intolerant of the omission of an X-ray under these conditions, however much they have objected to it at the time of injury, and the risk to the patient and to the surgeon's reputation from omitting X-rays in practically any case of joint injury is considerable.

Acute Fractures of the Shaft of the Femur in Children. H. Earle Conwell, M.D., F.A.C.S., Fairfield, Alabama. Journal of Bone and Joint Surgery, July 1929.

This article is quite extensive and covers "A Report of the Treatment and Results Attained in Eighty-Six Acute Fractures of the Shaft of the Femur in Children, With a Resume of Various Types of Treatment and Results Attained by Other Surgeons."

CONCLUSIONS

1. There is unlimited literature on fractures of the femur in children.

2. The following are the main forms of treatment of fractures of the femur in children:

A. Plaster cast

B. Plaster cast and extension (adhesive; calipers; Steinmann pin)

C. Suspension and extension

Method C. has several subdivisions,—such as: Buck's extension; skeletal traction (calipers and Steinmann pins) in the horizontal or perpendicular position (this method is rarely used and should not be applied except when amputation is being considered or when no other method is applicable. The interference with the epiphyseal growth should always be kept in mind when using skeletal traction in children); suspension and extension of one or both thighs in a perpendicular elevation with adhesive traction to the skin; extension of one or both thighs in a horizontal or perpendicular position, with the aid of the Thomas or the Hodgen splints; or the Bradford frame.

3 Excellent results are obtained by various surgeons by all of the above methods. The suspension and extension method is the most popular.

4. Treatment by open reduction should be the last resort, and usually is not necessary in the treatment of fractures of the femur in children,

5. A summary of the results of the cases treated by plaster cast shows that better results are obtained in the very young than in the older child.

6. A summary of the cases treated in plaster cast and extension shows that better results are obtained in the older child.

7. A summary of the cases treated by suspension and extension shows that better results are obtained in all ages up to the age of ten and eleven years than in either the series treated by plaster cast or in the series treated by plaster cast and extension.

8. A careful physical and radiological examination with careful history of the accident should always be made. Immediate reduction with aid of fluoroscope should be done. Every case of fractured femur should be considered an emergency and immediate treatment should be given following injury.

9. Unnecessary manipulation of the fractured limb should never be done. General anaesthetic, preferably ether, should be given at the time of reduction, unless general condition contraindicates; and, when this is the case, local anaesthetic should be used.

10. Definite attention should be given to the conservation of the muscle and the motion of the adjoining joints, thereby lessening the prolongation of convalescence, as well as preventing grave deformities and permanent disabilities. To aid this, frequent applications of physiotherapy treatment are recommended. Frequent radiographs should be made.

11. Good alignment is most important,—then bone approximation.

12. It is definitely concluded that compensatory lengthening does take place, also correction of poor alignment, but chiefly in patients before the age of eight years.

13. The suspension and extension method is by far the most comfortable dressing, and best results have been obtained by this method. This facilitates frequent daily examinations, frequent checks with X-Ray, dressings in compound wounds; makes easy the application of radiant light, hot baths, and active and passive motion. All of these make for a shorter convalescence and better functional results.

14. Frequent inspection of the patient should be made at outpatient clinic, following discharge from the hospital, and patient should be kept under observation until entirely well.

15 Granting that compensatory lengthening does take place and that serious misalignments are corrected in fractures of the femur in children, no surgeon is justified in neglecting any one of the important things which should be done immediately following a fracture of the femur.

16. In the treatment of children the mental factor is to be considered at all times.

Report of a Commission Appointed by the American Orthopaedic Association to Study the End Results of Intracapsular Fractures of the Neck of the Femur. Willis C. Campbell, M.D., Memphis, Tenn., H. Winnett Orr., M.D., Lincoln Neb., Robert B. Osgood, M.D., (Chairman), Boston Mass.

SUMMARY OF 1930 REPORT

I. Sex incidence.

In this second series of cases, in which are included fractures occurring in persons under sixty years of age, there is a higher percentage of males than in the first series comprising only

fractures occurring in persons over sixty years of age, forty-four per cent as compared to twenty-five per cent.

II. Mortality.

The mortality rate is lower in this second series of younger cases treated by closed methods, nine and two-tenths per cent., as compared with twenty-eight and six-tenths per cent.

The mortality rate of cases of all ages treated by methods of open surgical attack was two and seven-tenths per cent.

III. Proved bony union one year or more after treatment was instituted.

In the first series comprising only patients over sixty years of age treated by closed methods, the percentage of proved bony union was thirty and four-tenths. In this second series, comprising mainly cases under sixty years of age treated by closed methods, the percentage of proved bony union was fifty-one and nine-tenths.

The percentage of proved bony union in cases of all ages treated by methods of open surgical attack was eighty-six and four-tenths.

IV. Entirely satisfactory end results but not proved bony union one year or more after treatment was instituted,

The percentage of satisfactory end results including in this category the cases of proved bony union as under III.) in the first series of cases over sixty years of age treated by closed methods was fifty and four-tenths. In this second series, comprising mainly cases under sixty years of age treated by closed methods, the percentage was fifty-seven and seven-tenths.

The percentage of satisfactory end results in cases of all ages treated by methods of open surgical attack was eighty-one and five-tenths.

V. Non-union or death one year or more after treatment was instituted, death being presumably attributable to the immediate or remote effect of the fracture.

The percentage of non-union or death in the first series over sixty years of age treated by closed methods was forty-nine and six-tenths. In the second series, comprising mainly cases under sixty years of age treated by closed methods, the percentage was forty-five and eight-tenths.

The percentage of non-union or death in cases of all ages treated by methods of open surgical attack was forteen and one-tenth.

VI. Methods of closed treatment.

(a). The method of closed treatment employed in 210 cases of this second series from eight clinics was the Whitman method, either in detail or in principle. Of these, 113, or fifty-three and eight-tenths per cent, resulted in proved bony union at the end of one year or more after the treatment had been instituted.

(b). The Ruth method of closed treatment (See Journal of American Medical Association, XCIV, 169, Jan. 8, 1930), was employed in this second series in twenty-three cases from one clinic. Of these, fifteen or sixty-five and two-tenths per cent resulted in proved bony union at the end of one year or more after treatment had been instituted.

(c). The Orr-Thomson method of closed treatment (See Surgery, Gynecology and Obstetrics, XLVII, 101, July, 1928), was employed in this second series in twelve cases from one clinic. Of these, eight, or sixty-six and six-tenths per cent resulted in proved bony union at the end of one year or more after treatment had been instituted.

(d). The Albee method of open surgical attack (See Surgery, Gynecology and Obstetrics, XLIX, 810, Dec. 1929), was employed in the second series in thirty-nine cases from one clinic. Of these, thirty-eight, or ninety-seven and four-tenths per cent, resulted in proved bony union at the end of one year or more after treatment had been instituted.

(e). The Smith-Petersen method of open surgical attack (open reduction and special flange nail, unpublished) was employed in this second series in thirty-one cases from two clinics. Of these, twenty-six, or eighty-three and eight-tenths per cent, resulted in proved bony union at the end of one year or more after treatment had been instituted.

The Commission comments as follows on its findings in this second report:

1. The percentages of proved bony union and satisfactory end results in unimpacted intracapsular fractures of the neck of the femur in patients under sixty years of age and treated by closed methods are higher than in patients over sixty years of age, and the percentage of non-union or death is lower. The mortality rate of this second younger series is markedly lower.

2. The percentage of proved bony union one year or more after the institution of treatment is higher in the cases of all ages treated by open surgical attack than in the cases treated by closed methods. Only four considerable series of end results of open surgical attack comprising two methods were available to the Commission for study. In the series treated by the bone-peg or Albee method, most of the cases represented ununited fractures. While bony union might be expected to be more difficult to obtain in such cases than in cases of fresh fracture, the element of selection of cases enters and the Commission can justly compare only cases of fresh fracture treated by the special flange nail, or Smith-Petersen method of open surgical attack, with cases of fresh fracture treated by closed methods. The number of end results of this latter method of open surgical attack, available to the Commission, is too small and the results have been obtained by too small a group of surgeons to make it justifiable for the Commission to treatment of unimpacted intracapsular fractures of the neck of the femur.

The Commission takes this opportunity of expressing its gratitude to the various surgeons who have made these reports possible, often at the expense of much labor.

BOOK REVIEWS

Chronic Arthritis and Rheumatoid Affections, With Recovery Record, by Bernard Langdon, M. D., F.A.C.P. Director, The Wyatt Clinic; Member Editorial Staff of "Acta Rheumatologica" of the International League Against Rheumatism; formerly Associate Director, The Rockefeller Commission to France; Secretary, Technical

Board, Milbank Memorial Fund; President and Director, The Desert Sanatorium and Institution of Research; Tucson, Arizona. With The Collaboration of Louis I. Dublin, Ph. D., Statistician, The Metropolitan Life Insurance Company, New York. And Foreword by Dr. J. Van Breemen, Honorary Secretary and Director of Advisory Bureau, The International League Against Rheumatism, Amsterdam, Holland. William Wood & Company, New York. 1930. Cloth, Price $2.50. 138 pages.

Wyatt notes that Sir Frederick Eve has found "unmistakable evidence of arthritis in the skeletons of pre-historic animals and in the bones of the ancient Egyptians." He notes that from this obscure beginning arthritis and rheumatoid conditions have attained a social and economic importance in most civilized countries that places them ahead of tuberculosis, yet medical interest in them, generally speaking, is still both casual and rare; that the average arthritic receives but little encouragement or help from the general practitioner and that, for this reason, the aid of various "ics" and "isms" is so frequently sought; that in one large clinic in this country approximately 65 per cent of the patients applying for admission because of arthritis or rheumatoid conditions had been through the hands of chiropractors. Wyatt assumes the important fact that these diseases are to a great extent both preventable and curable. Certainly any system of treatment or effort, which may help the physician relieve the suffering from arthritis will be welcomed by the profession.

Clinical Allergy, Particularly Asthma and Hay Fever, Mechanism and Treatment. By Francis M. Rackemann, M.D., Physician To The Massachusetts General Hospital, Instructor in Medicine, Harvard Medical School, Boston, Mass. The MacMillan Co., New York. Price $10.50. Cloth, 617 pages.

The problems presented by allergy, asthma and hay fever are so far reaching and so profundly affect every type of practitioner of medicine and surgery that it is most natural that the literature has rapidly attained a large scope in the field of medical publication.

This volume is not only extensive as to its subject matter, but the bibliography cited covers a great range of authorities.

Text-Book of Medicine. Edited by Russell L. Cecil, A.B., M.D., Sc.D., Assistant Professor of Clinical Medicine in Cornell University; Assistant Visiting Physician in Bellevue Hospital, New York City. And Associate Editor for Diseases of the Nervous System, Foster Kennedy, M. D., F.R.S.E., Professor of Neurology in Cornell University; Head of Neurological Department, Bellevue Hospital. Second Edition, Revised and Entirely Reset. 1592 pages. Philadelphia and London: W. B. Saunders Company, 1930. Cloth $9.00.

Textbooks on medicine, for a number of years past, have been, compared to other branches of medicine, rather rare. For this reason it gives pleasure to receive a work, thoroughly modern, therefore up to the last minute with reference to diagnosis and treatment. In order that one may have a dim realization of the importance of this volume it is only necessary to note that in addition to the work of Cecil and Kennedy, the volume is made up by the contributions of 135 authorities in the medical profession. The volume is finely arranged, the text makes easy reading and it is only proper to say that it is a highly important addition to modern medicine.

The Surgical Clinics of North America. (Issued serially, one number every other month,) Volume 10, No. 6. Index Number. (Philadelphia Number—December 1930). 316 pages with 95 illustrations. Per Clinic year (February 1930 to December 1930). Paper $12.00; Cloth $16.00. Philadelphia and London. W. B. Saunders Company, 1930.

This issue contains a timely clinical lecture on "Cancer of the Rectum," by Dr. John B. Deaver; "Bronchoscopic and General Surgical Clinic," of Drs. Chevalier Jackson and W. Wayne Babcock, among which are clinics on "Diverticulosis of the Esophagus," "Acholic Hepatitis," at autopsy removed liver showed no evidence of bile; one on "Arteriovenous communcation between the Femoral Artery and Vein." "Pathologic Fractures," by Dr. Eldridge J. Eliason and V. W. Murray Wright; "Intestinal Tumors," by Dr. Edward J. Klopp; "Complicated Fractures of the Mandible," by Drs. Robert H. Ivy and Lawrence Curtis; "The value of and indications for Encephalography and Ventriculography with discussion of the technic." by Dr. Eugene P. Pendergrass; "Fractures of the Tarsal Scaphoid and of the Os Calcis," by Dr. Edward T. Crossan; "Three Common Surgical Diseases of the Rectum: Hemorrhoids, Prolapse of the Rectum in Children, and Fistula in Ano." by Dr. Astley P. C. Ashhurst, and Dr. John W. Klopp; "Acute Suppurative Osteomyelitis," by Dr. Thomas J. Ryan; while Dr. L. K. Ferguson and John Paul North present "Experiences With The Use of Splanchnic and Spinal Anesthesia For Upper Abdominal Operations. A study of 150 cases.

This is a remarkably good issue.

SHOULD COD LIVER OIL BE FLAVORED?

It is a well-known fact that young infants shy at aromatics. Older patients often tire of flavored medications to the point where the flavoring itself becomes repellant. This is particularly true if the flavoring is of a volatile nature or "repeats" hours after being ingested. Physicians have frequently used the terms "fresh," "natural," "sweet," and "nut-like," in commenting upon the fine flavor of Mead's Standardized Cod Liver Oil. They find that most patients prefer an unflavored oil when it is as pure as Mead's.

Physicians who look with disfavor upon self-medication by laymen are interested to know that Mead's is one Standardized Cod Liver Oil that is not advertised to the public and that carries no dosage directions on carton, bottle or circular. Mead Johnson & Company, Evansville, Ind., U. S. A., Poineers in Vitamin Research, will be glad to send samples and literature to physicians only.